



DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

February 13, 2015

Real Property Services Field Office

SUBJECT: ICC-B – Preliminary Master Site Design, Bethesda, MD

National Capital Planning Commission
Attn: Ms. Vivian Lee
401 9th Street, NW
North Lobby, Suite 500
Washington, DC 20004

Dear Ms. Lee:

We are pleased to forward the enclosed preliminary planning package for the Intelligence Community Campus-Bethesda (ICC-B), Master Site Design project. While the enclosed plans have now been approved for public coordination and review we would respectfully request that further posting of information on the internet and public forums be limited to the maximum extent practical given the overall mission sensitivity of the site.

The enclosed plans represent the final phase of the ICC-B campus redevelopment, and are consistent with the National Capital Planning Commission (NCPC) previous approval of the ICC-B Site Development Guide (final draft of May 21, 2011); and the review of the Intelligence Community Campus-Bethesda (ICC-B): South Campus Improvements; Submittal #1; The Centrum Building and Illustrations of Future Submittals #2 and #3; and most recently the Pedestrian Walkway submittal of December 5, 2014.

This submittal reflects the preliminary submittal for “Future Submittal #3” discussed in these previously reviewed documents and is a complete submission of project details including narrative and renderings of the Master Site Design prepared by Wiley|Wilson and Lardner/Klein (dated January 30, 2015).

This Master Site Design reflects the input from a recent series of community stakeholder discussions regarding the overall ICC-B site community context; final site landscape architecture plan; hardscape plan; perimeter access controls and fencing; and stormwater management approach for the campus. This preliminary submittal for “Future Submission #3” will be followed by a final NCPC project submittal currently planned for mid-2015.

This submission for NCPC review is also consistent with previous requests “to focus specifically on massing, articulation, materials and landscape design.” The project team believes this submittal is consistent with the overall ICC-B Campus design concepts presented to date and reflects the community character and context important to the NCPC and community stakeholders.

Knowing that storm water management is of critical importance on all projects, and especially the natural area around the ICC-B campus, the Master Site Design includes significant engineering focus to reduce peak runoff rates and volumes from the Campus consistent with MDE and EISA requirements.

The Master Site Design integrates previously completed stormwater management facilities on the campus to promote on-site rainwater harvesting, infiltration, and water quality treatment in an integrated manner to reduce runoff potential and replicate natural hydrologic processes to the maximum extent practical. Significant stormwater elements in the preliminary Master Site Design include additional bio-retention and turf filter areas associated with the new serpentine entrance improvements to North Campus; additional bio-retention areas configured to treat rooftop runoff from Roberdeau and Erskine Halls; and, an additional underground storage and infiltration area adjacent to the Ellipse area of the campus.

In addition to these end-of-pipe stormwater treatment facilities, sustainable design features are used to reduce runoff potential within the Master Site Design, including; use of a grass-pave feature for the fire apparatus access bay adjacent to Roberdeau Hall; use of infiltration strips along perimeter fencing behind Erskine Hall; and removal of significant amounts of on-site pavement and parking significantly reducing existing impervious cover on the campus. Completion of these features will enable closure of the existing stormwater outfall location behind Erskine Hall reducing impacts to the downstream channel at this location that has been long term focus of the site owners. This Master Site Design addresses the campus stormwater design as a whole and will be permitted through MDE as a final comprehensive site permit package in 2015.

Our team appreciates the opportunity to provide this preliminary overview of the ICC-B Master Site Design project for NCPC review and confirm that this submittal reflects our December 17, 2014 submittal to the Montgomery County – National Capital Parks and Planning Commission. Based on our ongoing dialogue with the MC-NCPPC staff, we anticipate they will be forwarding a separate board endorsement of this submittal to the NCPC within the next two weeks.

If we can provide any additional information to assist with your review please contact me at 443-654-7206. Thank you for all your positive engagement and input as we have prepared this submittal.

Sincerely,

Jeffrey T. Bahr, PMP
Project Manager
Real Property Services Field Office



National Capital Planning Commission

Preliminary Submission

January 30, 2015

APPROVED FOR PUBLIC RELEASE 2/13/15



ICC-B Master Site Development

Volume I – Project Narrative

Intelligence Community Campus – Bethesda, MD

W912DR-13-D-0026 T.O. #25

NCPC File Number 7326



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1. PROJECT REPORT

a. Name and telephone of agency project manager

Mr. John Connolly
 Project Manager
 USACE – RSFO
 Baltimore District
 410.854.0716

b. Narrative description of the project

Pursuant to the Intelligence Community Campus Master Plan approved by the NCPC on February 2, 2012, the US Army Corps of Engineers respectfully submits this Preliminary Submission Package for the Master Site Design Project for the ICC-B Campus at 2600 Sangamore Road, Bethesda, Maryland.

This submittal reflects the preliminary Master Site Design (MSD) developed to date for the ICC-B campus, and presents initial design approaches for developing an integrated design for the 30-acre campus, binding the previous campus redevelopment initiatives previously reviewed by the NCPC (North Campus, Centrum, Roberdeau and Erskine Hall Facade design packages) into an integrated site concept. The MSD follows the overall campus vision and extensive community dialogue that has transpired since 2010 and covers the primary site footprint highlighted in Figure 1 below.

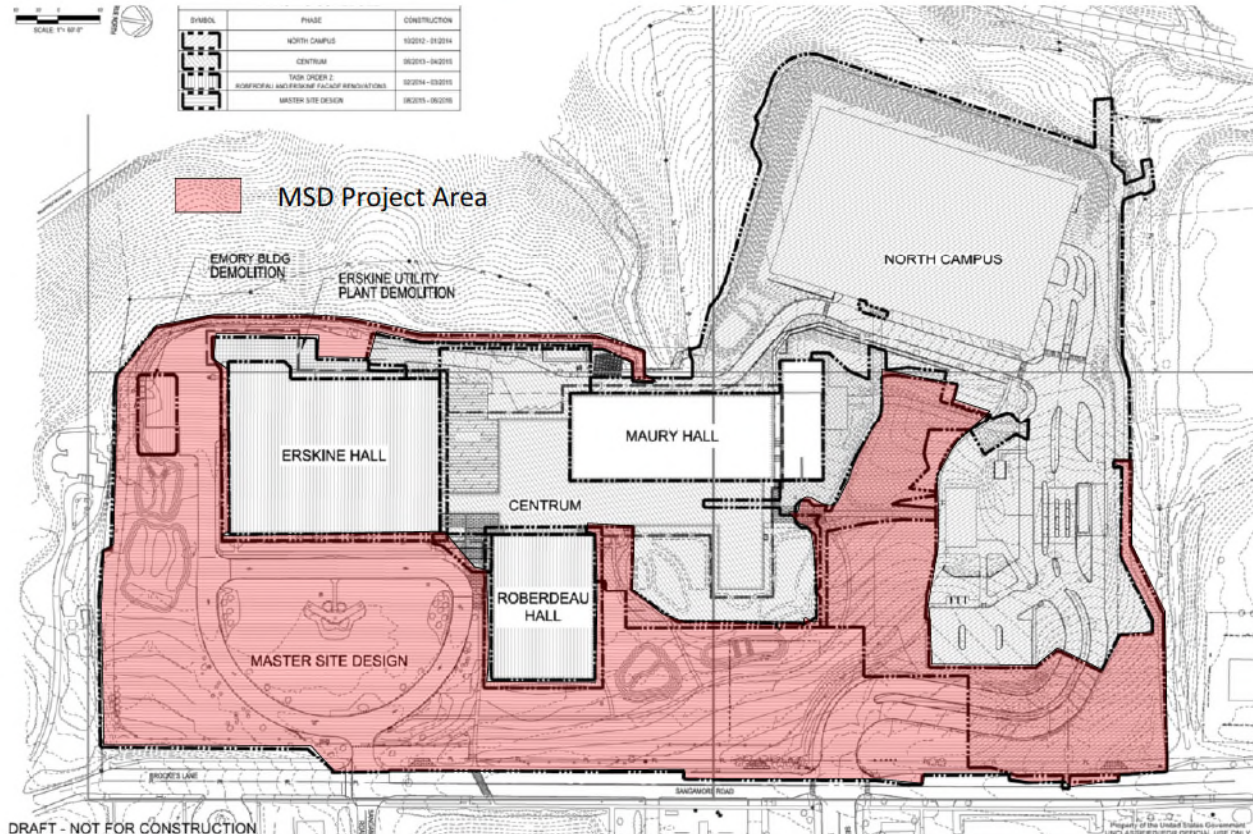


Figure 1: ICC-B Master Site Design (MSD) Project Area

Key elements of the MSD include coordinating site demolition and building construction; utilities and infrastructure connections; significant improvements to the site storm drainage systems; erosion control measures; site security and landscape architecture connecting elements that are outside the limits of previous redevelopment work and integrating the primary site entry features with the North Campus development program. Specific building program activities that have been previously approved by the NCPC which are integral to the MSD project include the North Campus elements; Centrum construction, Erskine Hall and Roberdeau Hall Facade renovations; demolition of the former main VCC Building, Emory Building and Erskine Central Energy Plant.

This preliminary NCPC submittal documents progress with the neighboring community regarding stormwater drainage designs for the campus and presents the conceptual integrated landscaping plan and connectivity with the campus elements reviewed by the commission to date.

c. Status of community participation

Development of this preliminary MSD submittal included a series of local community coordination meetings facilitated by the ICC-B project team between March and June, 2014. These meetings focused on defining 15% design initiatives within the MSD and included specific sessions on addressing landscape architecture, site setting, community aesthetics, and final stormwater management planning. The community dialogue was used to develop the documents provided with this submittal and were shared with the Montgomery County - National Capital Parks and Planning Commission staff (MC-NCPPC) at our joint review meeting on December 17, 2014.

These MSD project meetings supported the ongoing ICC-B community leadership meetings and continual dialogue on building construction progress; site transportation, traffic and parking; demonstrating the ICC-B team's continual commitment throughout the multi-year redevelopment process. This outreach has been instrumental in balancing site needs with community perspectives and has helped the design team formulate context sensitive solutions in a cooperative, collaborative manner with the surrounding community. In addition to these direct personal outreach efforts, the site team periodically updates the community on progress through community e-mail postings and document posted to the USACE's website: <http://www.nab.usace.army.mil/Missions/MilitaryPrograms/ICCB.aspx>. Table 1 provides a concise summary of key community engagement meetings relative to the MSD design development since work began in 2011 (note, only key meetings listed in the interest of brevity):

Table 1: Project Community Engagement Timeline Summary

Date	Key Topics
October 5, 2011	North Campus Garage, site compatibility and tree preservation, South Campus concept
November 29, 2011	North Campus - size and location of garage, compatibility and tree preservation. South Campus -concept Centrum building project
January 12, 2012	North Campus - size and location of garage, compatibility and tree preservation. South Campus -concept Centrum building project
June 21, 2012	Tree preservation, Centrum building project design, offsite erosion correction, NCPC submission
August 17, 2012	Tree preservation, offsite erosion correction, Centrum NCPC submission
September 24, 2012	Traffic Committee Meeting



Table 1: Project Community Engagement Timeline Summary (Continued)

Date	Key Topics
October 22, 2012	Traffic Committee Meeting
November 8, 2012	Tree preservation, Centrum NCPC submission, offsite erosion correction
November 27, 2012	Traffic Committee Meeting
January 28, 2013	Traffic Committee Meeting
March 20, 2013	NGA seniors luncheon project overview
April 12, 2013	Glen Echo Fire Department site orientation
April 16, 2013	PMO hosted stormwater document review session
April 18, 2013	PMO briefed at Pre-NCPC community leaders meeting
April 19, 2013	PMO hosted stormwater document review session
April 29, 2013	General community stormwater management meeting
April 29, 2013	M-NCPPC meeting
May 2, 2013	NCPC Presentation - preliminary approval Centrum building
May 7, 2013	M-NCPPC outfall walk
June 3, 2013	NPS MOU coordination
June 13, 2013	Monthly SWM document review session
June 24, 2013	Traffic Committee Meeting
August 21, 2013	NPS/M-NCPPC outfall Discussion
August 27, 2013	M-NCCPC outfall site walk
September 12, 2013	M-NCCPC outfall walk
September 16, 2013	Traffic Committee Meeting
September 17, 2013	M-NCCPC outfall status meeting
November 13, 2013	Tree placement discussion and site tour
December 12, 2013	Presentation of facades design, Roberdeau and Erskine Halls
December 13, 2013	Traffic Committee Meeting
January 29, 2014	NCPC and community leaders site visit, view exterior skin mock-up
January 30, 2014	M-NCPPC commission meeting
February 13, 2014	Stormwater Document Review Meeting (15 meetings total); most recent noted, discussion focus on off-site channels and outfall study.
February 14, 2014	Roberdeau exterior skin mock-up
February 20, 2014	MSD 15% Landscape Concepts
March 6, 2014	NCPC Meeting, Erskine and Roberdeau Hall Renovations
March 13, 2014	MSD 15% Stormwater Concepts
March 20, 2014	MSD 15% Landscape and Stormwater Concept Integration
May 15, 2014	MSD 35% Concept Design Review
June 30, 2014	Traffic Committee Meeting
October 28, 2014	Traffic Committee Meeting
December 8, 2014	Traffic Committee Meeting
December 17, 2014	MC-NCPPC Staff briefing Centrum pedestrian walkway and Master Site Design

d. Stormwater management

The preliminary MSD stormwater management concept is focused on an integrated campus design that achieves compliance with MDE regulations; EISA implementation guidance, and community commitment concerns for the entire redevelopment area of the campus. The preliminary MSD integrated concept significantly improves the hydrologic profile of the campus from the 2008 era pre-construction conditions (Figure 2). Incorporating a blend of green infrastructure (GI) and low impact development (LID) practices across the campus, including elimination of over seven acres of existing impervious cover on site. The MSD approach also reduces peak runoff rates and overall runoff volumes significantly, using green infrastructure practices to treat, absorb and infiltrate significant quantities of precipitation on site, replicating pre-development hydrology to the maximum extent practical.

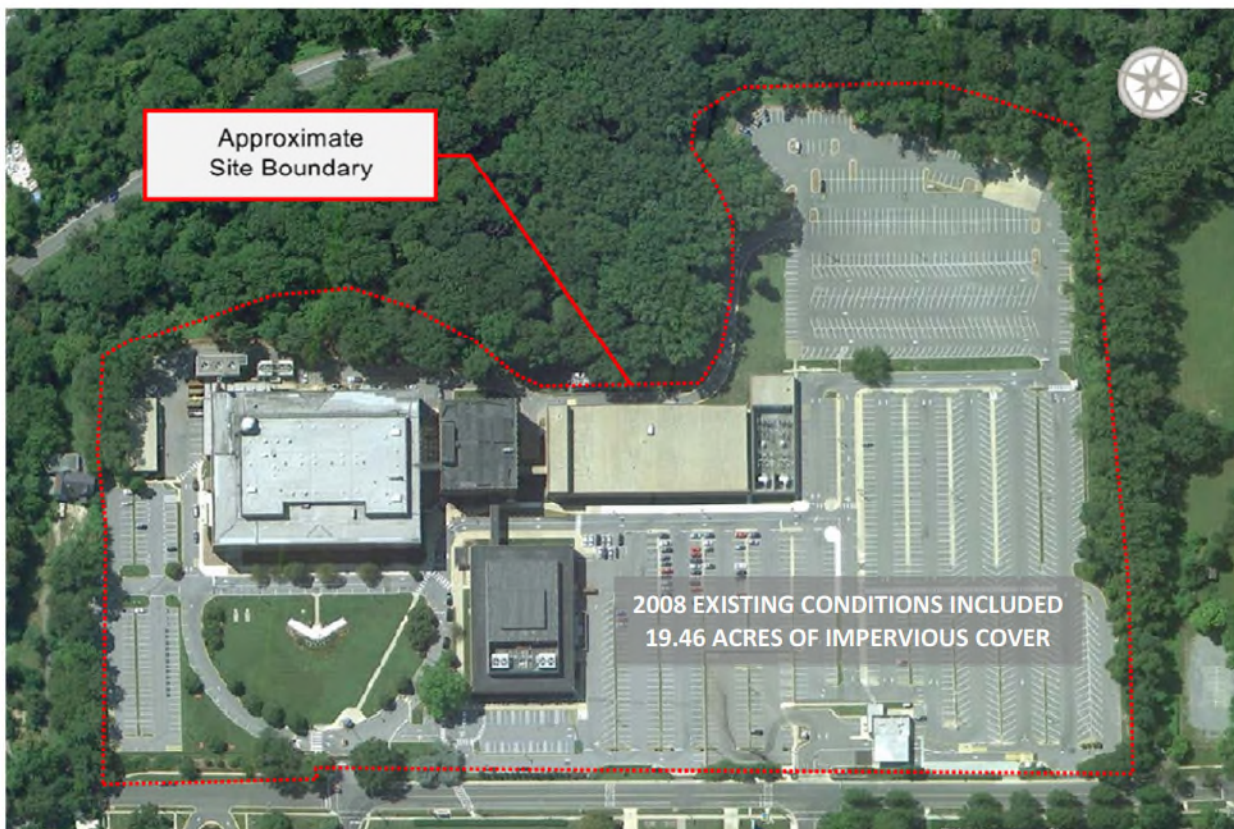


Figure 2: 2008 Aerial perspective of ICC-B Site, (Courtesy of Montgomery County GIS department)

The proposed stormwater management approach has been integrated with the three prior ICC-B campus redevelopment efforts presented to the commission, including the North Campus project, Centrum project, and the Roberdeau Hall/Erskine Hall Facade Renovations as described below.

The North Campus initiative redeveloped 10.6 acres of the campus (exclusive of forested area to remain), including; a new entrance driveway onto Sangamore Road; a new vehicle inspection station, visitor control center and a parking facility. Stormwater management features on the North Campus project were individually permitted through MDE in 2011, (Permit # 11-SF-0359). In addition to significantly reducing extent of impervious cover on the campus, the North Campus project (Figure 3)

included additional on-site stormwater storage and infiltration for volume reduction and peak flow control. Use of on-site infiltration was somewhat limited by available land area and soil properties on the North Campus project, however the bioretention area, extensive grass swale around the parking facility and media filtration chamber provide significant water quality improvement for this area of the campus. These features were completed in January of 2014 and are now fully operational.

The MSD project includes final revisions to the main site entry as agreed with the community during North Campus planning, providing a new serpentine entrance road aligned with the Sentinel Drive intersection. Stormwater features for this new entry drive configuration are currently being integrated with the MSD effort, and include bio-retention areas within the central portion of the campus to treat, attenuate and infiltrate runoff to the maximum extent practicable using GI/LID design approaches.

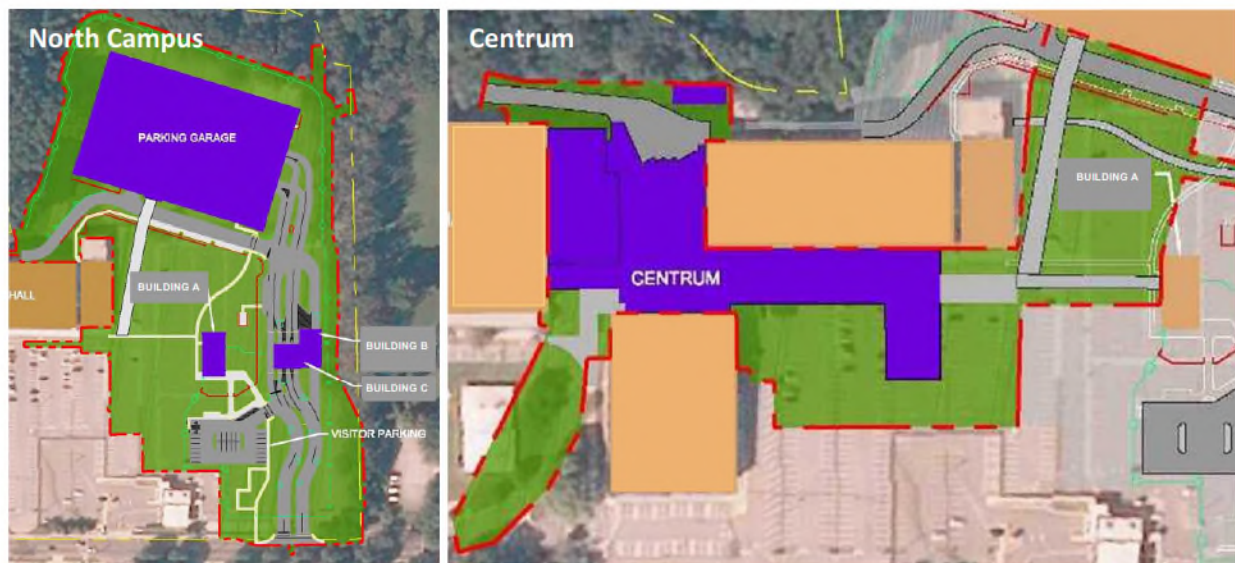


Figure 3: Limits of work - North Campus and Centrum Project

The Centrum project is redeveloping approximately 3 acres in the center of the campus, with the infill building being the principal element of work. Centrum project work includes the removal of the Abert Hall and associated parking areas and construction of an infill building to connect Maury, Roberdeau, and Erskine Halls into an integrated building design. As part of this integrated building concept, the Centrum project was modified in 2014, adding an accessible pedestrian walkway to the North Campus parking facility.

Stormwater improvements within the Centrum project integrated within the preliminary MSD concept include the use of rooftop rainwater harvesting for runoff reduction; integrated bio-retention for water quality enhancement and peak discharge volume control; and reuse of existing underground detention storage and outfall hydraulic controls. The Centrum GI/LID stormwater features permitted through MDE on Permit #13-SF-0209 are consistent with community engagement discussions to date and are projected to be complete in the mid-2015 timeframe.

The ICC-B campus projects to renovate Roberdeau and Erskine Halls are primarily focused on interior renovations and facade improvements, with exterior work limited to construction access corridors and

the demolition of the former campus visitor control facility (VCC). Due to the limited nature of exterior construction impacts (less than 5,000 square feet) these projects were not required to obtain project specific stormwater permitting through MDE. As the renovation of these buildings includes limited land disturbance around the perimeter of each building during renovations, the Centrum erosion and sediment control (E&S) permit was modified to include the limited land disturbance associated with these two projects.

Implementation of final MSD initiatives will include stormwater and E&S permitting up to the limits of work on these on-going campus projects (N. Campus, Centrum, Erskine, and Roberdeau projects). This will enable the MSD to develop an integrated campus drainage design covering the area bounded in red on Figure 4 below.

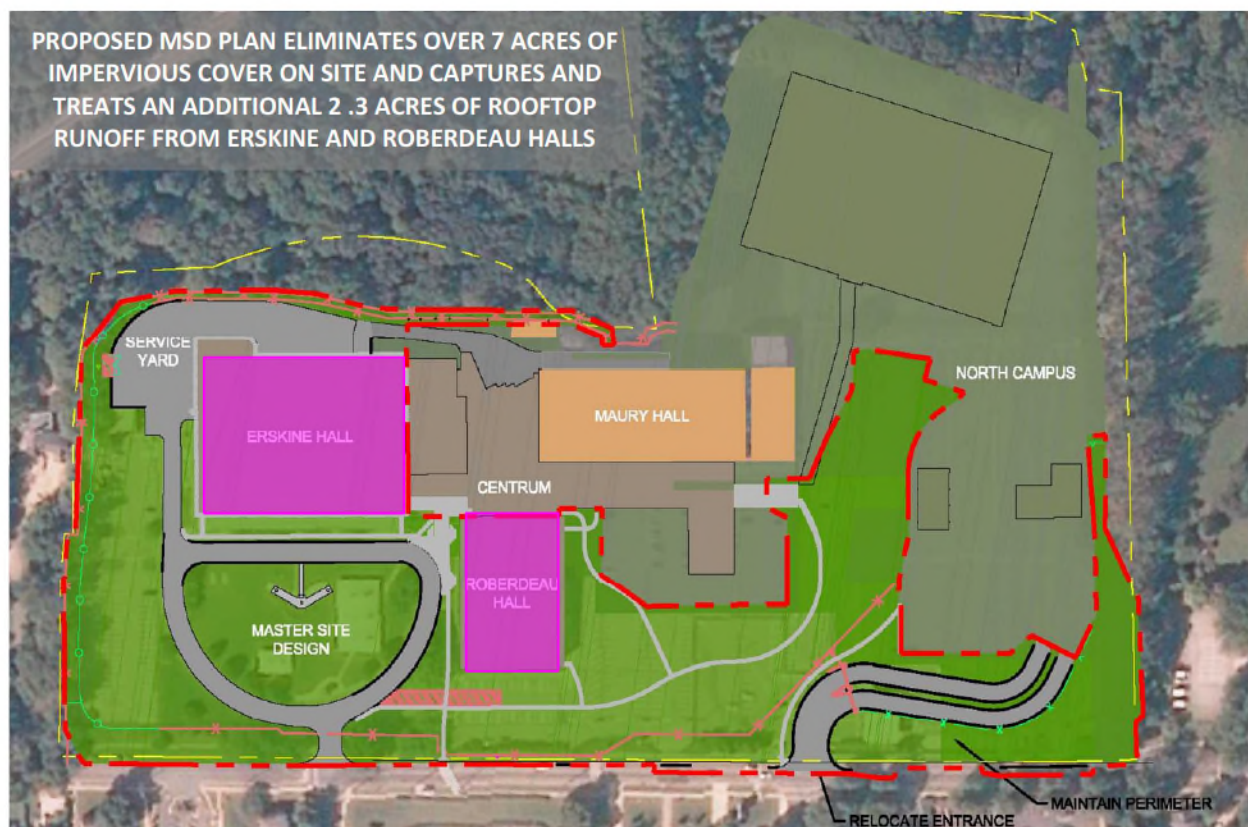


Figure 4: Stormwater Drainage Planning Area - Master Site Design Project

During development of drainage designs for the campus there were some existing downstream erosion problems identified on off-site land parcels owned by the National Park Service and Montgomery County. The North Campus project addressed a limited area of this erosion as part of the campus outfall reconfiguration incorporated in that phase of work; however a broader study of the downstream channels was requested by MDE as part of conditional approval of the campus stormwater designs.

This conditional approval required the site owner to investigate, design and construct repairs to the downstream channels in a reasonable timeframe during redevelopment of the site. The ICC-B team has engaged with the NPS and Montgomery County staff to review downstream channel conditions, study

erosion concerns and developed the administrative framework for the restoration of these channels in a manner proportional to impacts caused by previous ICC-B site activities.

The initial outfall channel study was completed and submitted to MDE on April 8, 2013 (MDE # 13-SF-0209). This study quantified sources of stormwater runoff entering channels downstream of the Sumner Campus, ascertaining and apportioning potential sources of sediment in the downstream canal (C&O Canal) due to these channels and defining limits of potential erosion responsibility based upon contributory watershed flows, and defined proportionality of flows emanating from the ICC-B site.

Design of channel restoration and the ability to perform required restoration will require a collaborative effort between the Defense Intelligence Agency and the National Park Service (NPS). The Office of the Director of National Intelligence (ODNI) and the NPS have completed a Memorandum of Intent (MOI) to accomplish this work, and MDE has confirmed their understanding that the NEPA process is expected to be complete around July, 2015, with restoration work implemented over a two year period between December 2014 and November 2016. The design of restoration measures is currently going through a 15% conceptual design effort prepared by the USACE to enable potential environmental impacts to be identified for the NEPA analysis.

The final design and construction of these channel restoration measures will be conducted independently from the MSD drainage plan, but will be closely coordinated as the final drainage design will reduce peak discharges to these channels and will remove the existing outfall at the southwest corner of Erskine Hall. Approval of the conceptual MSD stormwater management approach is a critical element of moving forward with the channel restoration analysis and it is understood that the MDE's final stormwater permit approvals for the MSD project will be contingent on appropriately addressing these off-site channels in coordination with the community and adjacent property owners.

Site Stormwater Methodologies and Regulatory Background

The preliminary MSD stormwater concept is based on applicable federal and state codes as well as ongoing dialogue with the surrounding community and regulatory personnel regarding ICC-B site stormwater impacts. Specific ICC-B site design documents reviewed during preparation of the MSD stormwater concept included:

- *The NCPC Project Summary for the North Campus Development*
- *Sumner Campus ICC-B redevelopment Outfall Channel Study (Wiley|Wilson, 2013)*
- *Storm Water Drainage Engineering Study (USACE 2011)*
- *Traffic Impact Study – Supplement (Black & Veatch, Wiley|Wilson, Total Site Solutions 2012)*
- *North Campus MDE final Submittal (Kimley-Horn, 2012)*
- *Campus Stormwater Management Plan (URS, 2013)*
- *Centrum MDE 100% submittal (URS, 2013)*
- *Outfall Study and Restoration Design NEPA Extension Request (February 24, 2014)*
- *Pedestrian Bridge 65% Design/MDE Permit submittal (Whiting-Turner, March 19, 2014)*
- *Roberdeau and Erskine Hall Interior Renovations, Roof Drainage Coordination (January 22, 2014)*



The basic premise of state and federal stormwater regulations applicable to the ICC-B MSD is that enhanced stormwater management and project permitting is required for all land disturbance over 5,000 square feet. The guiding principles of these statutes focus on replicating predevelopment hydrology to limit impacts to downstream waterways. These statutes require the use of green infrastructure and low impact development (GI/LID) techniques to achieve these objectives.

The federal guidelines, (EISA 438 and accompanying 2009 EPA implementation guidance) refer to these practices as GI/LID, while the Maryland state statutes (MDE) refer to the approach as Environmental Site Design (ESD). EISA 438 requires on-site retention of runoff from the 95th percentile rainfall event, which was used as a federal statute basis of design for the MSD stormwater concept, with the goal of reducing runoff to predevelopment conditions. For development in the Bethesda region, this equates to on-site retention of the runoff volume associated with 1.7 inches of rainfall within a 24 hour period.

In addition to retaining this runoff volume, federal EISA 438 guidance requires the runoff from all impervious areas to be treated with GI/LID to the *Maximum Extent Technically Feasible (METF)*. Guidelines on defining the limits of METF are provided in the 2009 EPA EISA implementing guidance and have been followed in the MSD stormwater management concept. The concept design is formulated upon, “balancing the checkbook” for drainage across the entire ICC-B site, enabling the site as a whole to achieve EISA compliance. In addition to addressing these EISA needs, MSD drainage concept includes additional on-site features to detain and treat runoff from the 25-year storm event; modulating runoff from 5.77 inches of rainfall within a 24 hour period (exceeding all current regulatory requirements).

Similar to EISA, the Maryland state statutes (MDE regulations) require the use of ESD practices to reduce post-development runoff to levels found in predevelopment conditions. MDE requires ESD to be used to the *Maximum Extent Practicable (MEP)* to control stormwater from new development and redevelopment. If stormwater management volumes are not met through ESD to the MEP, other stormwater management options must be implemented to meet the remaining storage requirements.

MDE has established two sets of stormwater management sizing criteria applicable to the MSD stormwater design; one for *new development* projects and one for *redevelopment* projects. The following paragraphs outline the key differences between the MDE redevelopment and new development standards to facilitate understanding of the standards used in defining the MSD stormwater compliance strategy:

- MDE *new development standards* require stormwater management measures that benefit water quality, groundwater recharge, and channel protection to meet ESD requirements. A target rainfall amount from all impervious areas must be captured and treated to meet the requirements. The target rainfall is based on the initial site design conditions (i.e., proposed imperviousness and soil type). ESD must be used to treat a minimum of 1 inch of runoff from impervious surfaces, providing the water quality requirement. When the entire target rainfall is treated using ESD, the channel protection, water quality and recharge requirements are all satisfied.
- MDE *redevelopment standards* require ESD to be implemented to the MEP to provide water quality treatment for 50 percent of the existing impervious area plus the net increase in



imperious area within the stormwater management study area. Treatment must be provided for the runoff from 1 inch of rainfall for 50 percent of the existing impervious area; or, the redevelopment design must reduce existing impervious areas with the stormwater management study area by a minimum of 50 percent. When redevelopment reduces the impervious area within the study area by 50 percent or more, MDE considers the water quality treatment requirement to be satisfied. Where conditions prevent targeted impervious area reduction and the implementation of ESD to the MEP, alternative management measures must be considered. Stormwater quantity (peak flow) management, including channel protection, is not specifically required by MDE for projects that qualify for the redevelopment criteria. Areas of redevelopment where the existing imperious area is less than 40 percent are required to follow MDE's *new development* requirements outlined above.

As the ICC-B site was over 40% impervious before redevelopment activity was initiated, all stormwater designs submitted to MDE to date have been subject to the MDE redevelopment requirement. All of the current MSD initiatives are also designed to meet these redevelopment criteria, except for the drainage improvements around Erskine Hall (Drainage Area 4). The MSD for this area re-defines internal drainage area boundaries to enable closure of the southwest outfall behind Erskine Hall. Due to this internal re-configuration of drainage boundaries, this portion of the MSD was designed to meet MDE's new development standards.

Baseline Drainage Design Considerations

The preliminary MSD concept design included assessment of natural landform conditions prior to any development on the campus (circa early 1900's), predevelopment conditions (circa 2008), and proposed ICC-B redevelopment conditions (2014) to establish targets and develop an effective drainage strategy to satisfy Federal and State drainage code requirements and meet community commitments regarding existing site drainage impacts. These three scenarios are referred to as "natural", "predevelopment" and "proposed" conditions in the interest of clarity and brevity moving forward in this report. Drainage comparisons are also based on the 25.12 acre developed area of the ICC-B property, native woodlands and undisturbed buffers outside of the fenced enclosure are not included in the drainage computations (the full ICC-B property acreage is approximately 30 acres).

Natural Site Conditions

Working with the community, the design team established a baseline for natural conditions using a combination of topographic mapping and aerial photography archives relative to the site. Using this information the design team confirmed that the ICC-B site most likely consisted of rolling wooded land prior to site development in the early 1940's. Based on 1945 USGS topographic mapping (Figure 5) it is evident runoff from the ICC-B site flowed predominately west to the Potomac (under the C&O Canal via 1800's era culverts) with the exception of the southeast corner which flowed east toward what is now Sangamore Road and Brooke's Lane.

This archival topography presents four distinct drainage areas on the ICC-B site, generally replicating the current drainage patterns. Drainage Area 1 flowed to the northwest channel; a small natural channel that flows west alongside what is now Wapakoneta Road and eventually to the C&O Canal. Drainage



Area 2 flowed from the central area of the site to a channel which also flows west to the C&O Canal. Drainage Area 4 lacked a defined drainage way, indicating runoff was fairly minor and primarily confined to sheet flow across the hillside leading down to MacArthur Boulevard. Drainage Area 3 flowed to the southeast out to Sangamore Road. Site soils analysis indicates native soils are predominately Type B soils which drain well. Some Type C soils were found along the south east portions of the site and have been factored into the preliminary MSD stormwater analysis.

These soil types and land uses are therefore taken as the basis of design for natural site conditions (woods in good condition) prior to any development at the ICC-B site. This baseline for achieving campus EISA compliance will be useful for developing the downstream channel restoration efforts planned for the site.

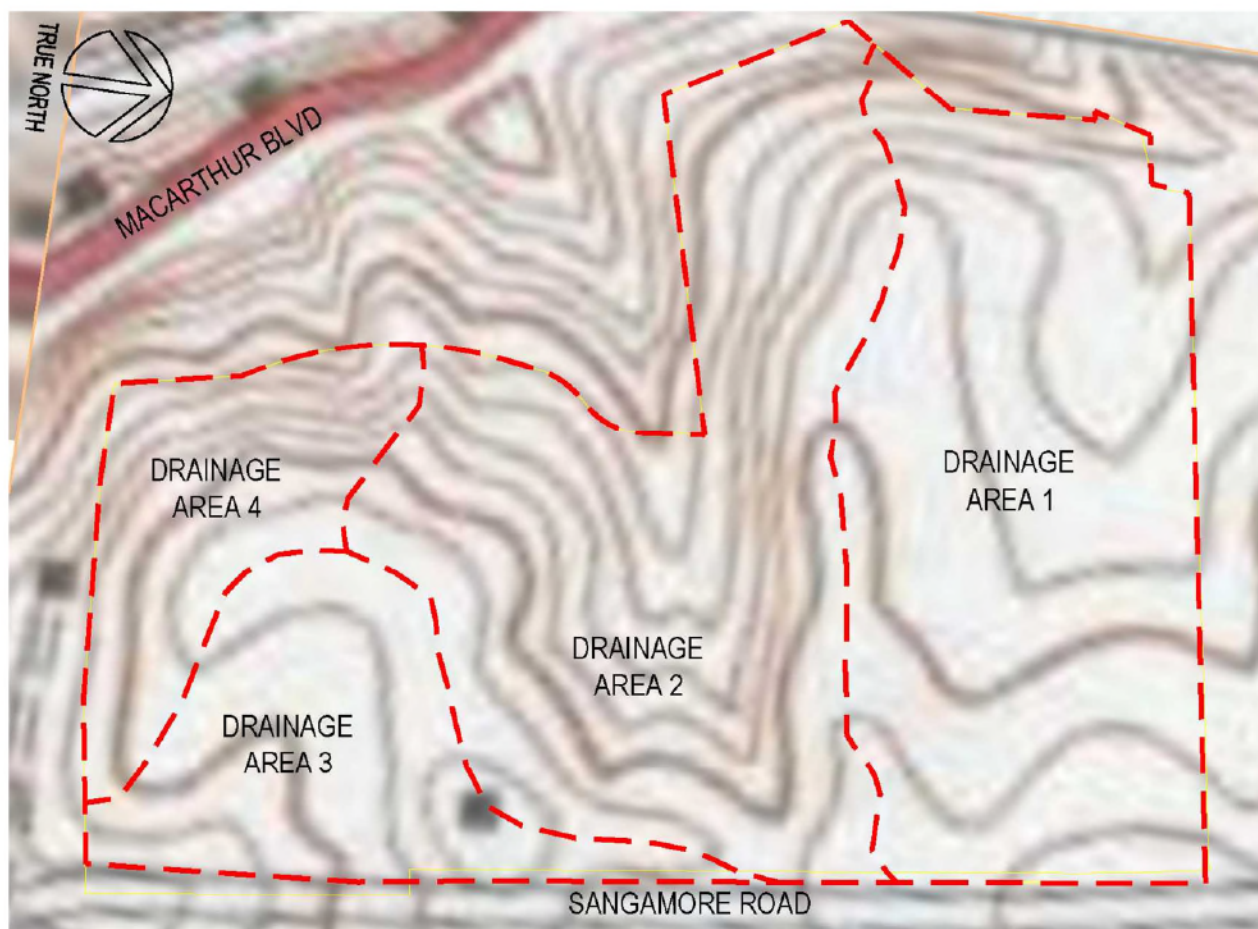


Figure 5: 1945 Archive Topography and Pre-Development Drainage (USGS Archives)

Pre-Development Site Conditions

Comparing this natural condition baseline to ICC-B pre-development conditions (Figure 6), the campus was over 40% impervious and pre-development topography closely replicated natural conditions with a few key differences as described below.

Under the pre-development conditions, portions of the ICC-B site in Drainage Area 1 continued to drain to the Northwest channel via two independent stormwater outfalls. Drainage Area 2 continued to the mid-site channel, but the upper portions of the drainage area were filled in to accommodate the construction of Maury Hall and the stormwater detention structure behind it. Drainage Area 4 was captured and piped in the pre-development site condition, creating the southwest channel as a direct result of campus discharge. Drainage Area 3 was piped to the municipal stormwater system installed along Sangamore Road. This setting is the basis of design for pre-development conditions considered for the MSD stormwater concept.

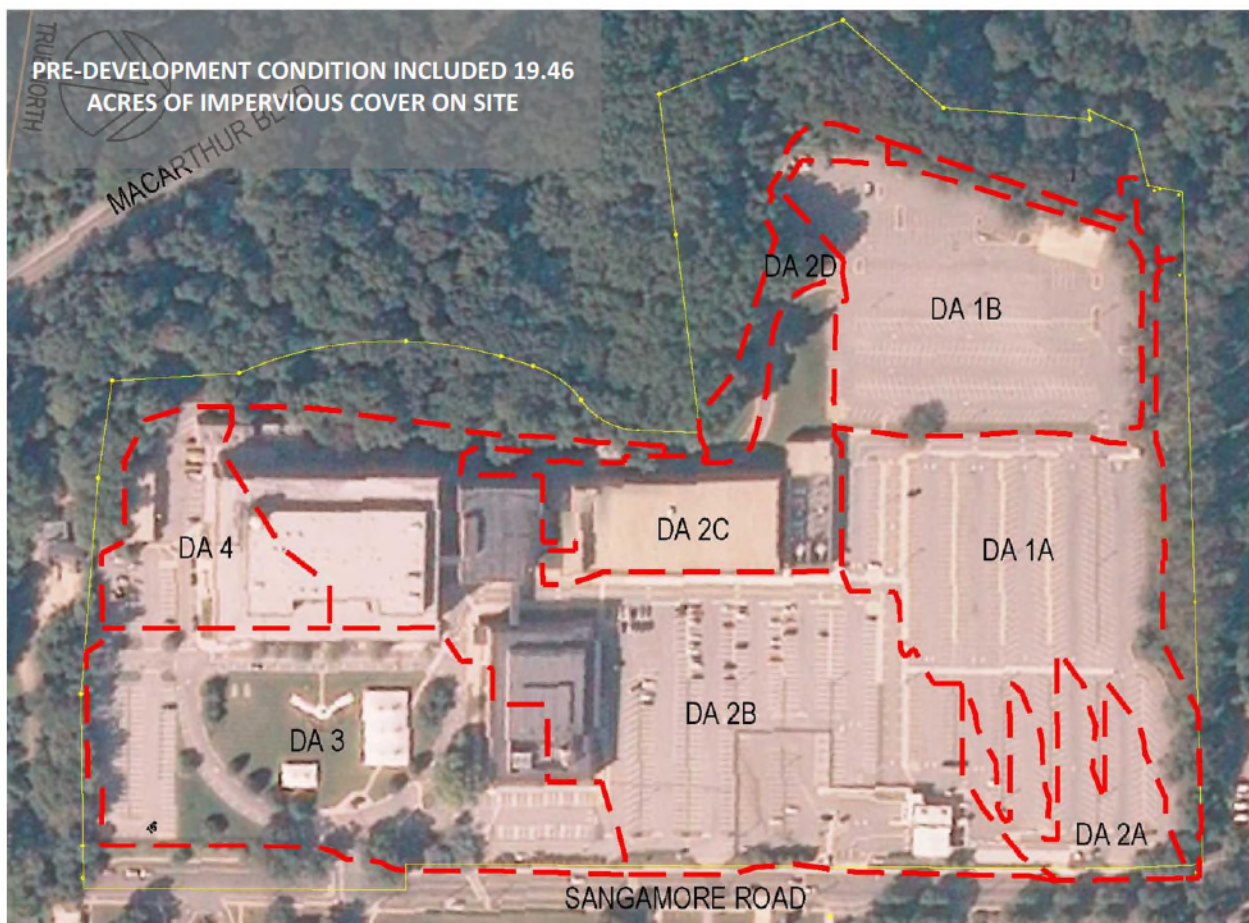


Figure 6: Pre-development drainage areas and conditions (2008 Aerial Imagery)

MSD Proposed Conditions

The 2014 MSD stormwater concept (proposed conditions) is based upon completing all phases of the proposed ICC-B redevelopment. Impervious surfaces throughout the site have been significantly reduced; rooftop runoff from Erskine and Roberdeau Halls has been consolidated and rerouted to be

managed onsite and Drainage Area 4 has been consolidated with Drainage Area 3 in accordance with the recommendation provided in the USACE's 2011 *Storm Water Drainage Engineering Study*, eliminating the problematic off-campus outfall southwest of Erskine Hall. This is taken as the basis of design for proposed conditions considered for the MSD stormwater concept design (Figure 7).



Figure 7: Proposed Conditions (Preliminary MSD Drainage Boundaries)

Table 2 provides a comparative summary of the stormwater parameters associated with natural site conditions, pre-development site conditions, and proposed conditions for the developed area of the ICC-B parcel, (red dashed line on Figure 7, 25.12 acres).

Table 2: Comparison of ICC-B Site Drainage Area Characteristics

DA	NATURAL CONDITIONS		PRE-DEVELOPMENT				PROPOSED CONDITIONS			
	Total Area		Total Area		Impervious		Total Area		Impervious	
	(AC)	(%)	(AC)	(%)	(AC)	(%)	(AC)	(%)	(AC)	(%)
1	9.43	38%	7.48	30%	6.23	83%	8.18	33%	4.17	51%
2	9.13	36%	11.60	46%	9.67	83%	10.33	41%	4.98	48%
3	4.01	16%	4.47	18%	2.24	50%	6.61	26%	3.23	49%
4	2.56	10%	1.57	6%	1.32	84%	0.00	0%	0.00	0%
ICC-B	25.12	-	25.12	-	19.46	77%	25.12	-	12.38	49%

MSD Compliance Strategy

The MSD stormwater concept design is focused on providing a comprehensive stormwater management analysis for the entire ICC-B campus demonstrating compliance with MDE, EISA, and community commitments to detain and treat the 25-year design storm. This analysis approaches the campus as one development project with four post-development drainage areas as summarized in Table 3.

Table 3: MDE ESD Target Volumes (Proposed Conditions)

MDE ESD TARGET VOLUMES		
Drainage Area	Criteria	Target Volume (cubic feet)
1	Redevelopment	1,949
2	Redevelopment	255
3A	Redevelopment	0
3B	New Development	17,214
ICC-B	Entire Campus	19,417

It is important to note that the MSD ESD targets presented in Table 3 include evaluation of the rooftop runoff volumes from Erskine, Roberdeau and Maury Halls, even though improved management of runoff from these areas is not specifically required by MDE or EISA, (these rooftop areas are not considered part of redevelopment activity by MDE standards as the rooftop impervious footprint is not changing).

The MDE redevelopment ESD target volumes listed in Table 3 reflect the significant reductions in the amount of impervious surfaces remaining within these areas when MSD work is complete. Drainage Areas 1 and 2 require small amounts of additional ESD volume, whereas no additional ESD volume is required within Drainage Area 3A due to significant reductions in impervious surfaces within this area.

The target volume in DA-3A is met through direct removal of impervious cover within this drainage area, (over 50% of the existing impervious area is removed, thus meeting the MDE runoff reduction target). Drainage Area 3B will require management of an additional ESD volume to enable closure of the existing outfall behind Erskine Hall (DA-4).

This re-routing of existing DA-4 (approximately 2 acres) requires application of MDE new development design standards, requiring treatment of a target precipitation of 2.2 inches. This resulted in the need to retain approximately 17,200 cubic feet of water on-site within DA-3B. In total, the MSD design results in a requirement to retain 19,417 cubic feet of storage to meet campus wide MDE ESD requirements.

The EISA requirements listed in Table 4 are greater than the MDE requirements as EISA does not distinguish between new development and redevelopment, focusing on achieving the METF criteria for the entire campus footprint. This campus EISA data is based on mandated retention of the 95% rainfall event (1.7 inches of rainfall over a 24-hour period), this equates to infiltrating and retaining approximately 53% of the entire 2-year, 24-hour storm event (3.18 inches of rainfall) within the campus.

Table 4: EISA GI/LID Volume Targets (Proposed Conditions)

EISA GI/LID TARGETS										
DA	AREA (AC)	IMPERVIOUS AREA		CN			S' (IN)	I _A (IN)	D (IN)	V _{LID} (FT ³)
		(AC)	%	IMPV	OPEN	COMP				
1	8.18	4.17	51%	98	61	80	2.50	0.5	0.39	11,580
2	10.33	4.98	48%	98	61	79	2.66	0.53	0.36	13,510
3	6.61	3.23	49%	98	61	79	2.66	0.53	0.36	8,640
ICC-B	25.12	12.38	49%	98	61	79	2.66	0.53	0.36	32,830

Table 5 provides a summary of the preliminary MSD stormwater design compliance requirements as described above. This summary demonstrates the ability of the MSD stormwater concept to slightly exceed EISA compliance volume requirements across the entire campus and highlights how the design significantly exceeds minimum standards of the MDE regulations, providing almost three times the required treatment volume.

Table 5: MSD Stormwater Concept Compliance Summary (Proposed Conditions)

STORMWATER COMPLIANCE						
DA	EISA GI/LIDv			MDE ESDv		
	Required (ft ³)	Provided (ft ³)	%	Required (ft ³)	Provided (ft ³)	%
1	11,580	635	5%	1,949	23,972	1230%
2	13,510	14,599	108%	255	14,637	5740%
3	8,640	17,976	208%	17,214	19,482	113%
ICC-B	32,830	33,210	101%	19,417	58,091	299%

MSD Drainage Area Compliance Summary – Drainage Area 1

The North Campus project achieved EISA compliance within Drainage Area 1 by meeting the METF requirements, as permitted and approved by MDE Permit #11-SF-0359. At the time this project was designed and permitted in 2011 an ESD water quality volume of 23,972 cubic feet was provided via mechanical filtration and additional underground stormwater detention storage. It is important to note that although Drainage Area 1 was unable to meet regulatory standards for on-site infiltration credit due to limiting natural soil conditions, an open bottom underground detention structure was utilized in the North Campus design to maximize any available infiltration potential. This additional infiltration potential was not considered in regulatory submittals or included in figures presented in this report.

The post-development stormwater system in Drainage Area 1 was designed to significantly reduce runoff volume through impervious area reduction and peak runoff control. These measures were considered the METF for this portion of the site under EISA. Development of the pedestrian bridge/walkway was integrated with the original North Campus stormwater drainage design and was approved by MDE as an amendment to the Centrum project (MDE Permit # 13-SF-0209) in 2014.

The MSD stormwater concept design will not increase the drainage area or impervious area contribution to the existing North Campus stormwater systems in Drainage Area 1. The MSD concept does include additional compensatory on-site infiltration in the south campus area (Drainage Area 3) using an underground infiltration chamber system designed to provide EISA volume compliance for the entire campus; including an equivalent treatment volume to compensate for area of the North Campus that had limited soil infiltration potential.

MSD Drainage Area Compliance Summary – Drainage Area 2

Redevelopment of Drainage Area 2 included removal of extensive impervious hardscape surfaces resulting in a minimum required treatment volume of 255 cubic feet. Stormwater management features within Drainage Area 2 were primarily developed as part of the North Campus work and additional measures will also be implemented during the Centrum and MSD development projects.

The North Campus project provided ESD/GI/LID volume in Drainage Area 2 via on-site bioretention which meets MDE and EISA requirements. The subsequent Centrum project design (MDE Permit # 13-SF-0209) met ESD/GI/LID volume requirements for the Centrum development through installation of several bioretention ponds, a green roof design, and rooftop rainwater harvesting system.

The MSD concept design provides additional ESD/GI/LID volume via bioretention structures treating the rooftop runoff from Roberdeau Hall and the new serpentine entrance road serving the North Campus area, fulfilling the Drainage Area 2 EISA requirements as listed in Table 4.2 (13,510 cubic feet total).

MSD Drainage Area Compliance Summary – Drainage Areas 3 and 4

The preliminary MSD stormwater design includes consolidation of existing outfalls from Drainage Areas 3 and 4 to enable closure of the existing campus outfall location behind Erskine Hall, and re-routing of runoff from pre-development Drainage Area 4 to the existing outfall in Drainage Area 3 which discharges to the Montgomery County stormwater system which drains across Brooke's Lane and Sangamore Road, ultimately discharging to Little Falls Branch just above the Capital Crescent Trail.

Even with consolidating these internal drainage area boundaries, peak flows and runoff volumes from the expanded Drainage Area 3 will be significantly reduced through the removal of existing impervious parking areas east of Roberdeau Hall; the removal of the Emory Building and associated parking; rerouting of runoff from the Erskine Hall loading dock to on-site bioretention areas via a grass swale; and treatment of Erskine Hall rooftop runoff through additional bioretention and underground infiltration chambers. These measures within Drainage Area 3 are integral to achieving ESD/GI/LID requirements of MDE for Drainage Areas 3 and 4 while simultaneously enabling the entire developed area of ICC-B campus to achieve EISA compliance.

Specific ESD/GI/LID volumes required for Drainage Area 3B (new development requirements) are met via bioretention facilities incorporated upstream of the underground infiltration system on the MSD concept site plans. The additional underground infiltration and open-bottom detention system is a key element required to provide the 3,835 cubic feet of on-site infiltration for Drainage Area 3A enabling the entire campus to comply with EISA. The 16,629 cubic feet of detention provided in the underground detention/infiltration system also enables reductions of peak flows to the drainage system which flows



under Brooke's Lane compared to current site drainage conditions associated with drainage from Drainage Area 3.

MSD Drainage Area Compliance Summary – Downstream Channels

In addition to compliance with MDE and EISA requirements, the MSD concept analysis included review of discharges to receiving channels downstream of the ICC-B site to ensure channels have adequate capacity for anticipated flows and design velocities do not promote erosion or scour in the channels. Proposed peak flow rates indicate reduction of downstream flow for all rainfall events at each proposed outfall for storms up to and including the 25-year design storm event (5.77 inches of rainfall in a 24-hour period) which was taken as the basis of design criteria for site drainage planning and downstream channel stability analysis. These peak flows will be used for assessing channel restoration needs for the downstream channels to remain in service upon completion of the MSD work and serve as the baseline for the 15% design of the off-site channel restoration work planned in conjunction with the NPS.

Given specific community concerns about existing peak flows associated with Drainage Area 3 and concerns expressed about consolidating Drainage Area 4 into this drainage outfall location, the MSD team conducted a more thorough evaluation of the Montgomery County drainage system that carries flow across Brooke's Lane out to Little Falls Branch.

This included conducting a tracer dye study to confirm the route of the underground drainage system that collects flow from this area of the campus, and review of archival drainage maps from the 1950's when the drainage ICC-B campus first developed the drainage system in this area. This research and field investigation confirmed that drainage from Drainage Area 3 travels east across Brooke's Lane through a network of underground concrete pipes to an outfall east of Sangamore Road that discharges to Little Falls Branch. This outfall location is on the east side of Sangamore Road (downslope and away from the Brooke's Lane area in a remote natural area that is part of the regional park system). This outfall location is heavily armored with large boulders and riprap that was evidently installed during previous drainage work in the area and there was no evidence of channel instability or erosion concerns.

Based on record survey information and archival mapping related to this network, it was confirmed that the campus outfall location currently has capacity to handle up to the 25-year storm event. This included analysis of the most hydraulically constrained element in this drainage network (the 18" pipe beneath Brooke's Lane directly adjacent to the ICC-B site). This pipe segment was calculated to have a design capacity of 16 cubic feet per second (cfs). Before selecting this as a basis-of-design parameter, the design team consulted with Montgomery County drainage officials and they confirmed they have no record of capacity issues noted within this drainage network.

The proposed MSD drainage improvements for the consolidated Drainage Area 3 were thus designed to limit discharges from the 25-year storm to less than 16 cfs and the current design achieves 13 cfs. The design team also confirmed that even with the proposed drainage area consolidation, the proposed design will reduce peak flows from the 100-year event from 46 cfs in the pre-development condition to 40 cfs after completion of the MSD initiatives. Given this context, the proposed consolidation of Drainage Areas 3 and 4 is not expected to increase flood potential along Brooke's Lane and actually will reduce peak flows appreciably over current conditions.



These preliminary MSD drainage concepts will form the basis of assessing downstream channel erosion concerns that will be addressed along Wapakoneta Road, the Mid-Site Channel and Southeast Channel along the southwest boundary of the ICC-B site. Design of these improvements is proceeding in conjunction with the NPS and is therefore not specifically addressed in this MSD NCPC submittal. Rationalization of requirements and coordination of channel restoration activities will be closely coordinated with the community both during the NEPA review process as well as during the detailed design development of these actions as a separate interrelated initiative.

Stormwater summary

Design of the final redevelopment initiatives for the ICC-B is nearing completion. The Master Site Design is the final phase for pulling all individual project initiatives into a cohesive, functioning campus. This preliminary stormwater management concept for MSD was developed to provide compliance with all federal and state regulations and address drainage concerns raised by members of the local community.

The MSD stormwater concept achieves regulatory compliance through reduction of impervious surfaces, installation of ESD practices such as swales and bioretention, installation of GI/LID initiatives including underground infiltration practices and rerouting of roof top runoff from existing buildings for treatment.

Underground detention was provided to attenuate peak flows allowing discharge from the campus to be reduced from the predevelopment state for all design storms up to the 25-year design storm exceeding minimum regulatory standard of the 10-year design storm (MDE standard).

Additional community drainage concerns addressed in the MSD include closing the eroded outfall behind Erskine Hall and reducing the potential for stormwater network surcharging within Brooke's Lane by adequately conveying the 25-year storm where previously a 2-year storm event resulted in system surcharging.

Through the use of several different techniques and strategic stormwater routing, the MSD stormwater concept ensures the entire campus is compliant with MDE and EISA requirements as well as commitments made to the community. Going forward the design team will continue to focus on reducing runoff impacts of the site within budgetary limits and the practicality of the maximum extent technically feasible in accordance with EISA.



e. Landscape architecture

The MSD's landscape design responds to the site's natural setting along the Potomac, tying this character to recent improvements made to the North Campus and Centrum, and to the original ornamental and historical landscape that remains. The preliminary MSD landscape plan maintains the heavily forested area to screen the site from the west, using the natural bluff terrain of the Potomac to provide an effective backdrop for the campus. This forested buffer protects the adjacent NPS lands and the local trailhead (managed by M-NCPPC) along the northwest border of the site adjacent to the Waldorf School. Primary design elements in the MSD landscaping plan are focused on providing a compatible aesthetic to the residential and commercial neighborhoods east and south of the site along Sangamore Road and Brooke's Lane.

Intended to tie the campus into a coherent whole visually and functionally, the design incorporates the concepts within the February 2012 NCPC approved Master Plan that included commentary regarding provision of "landscaped areas along Sangamore Road, made possible with the elimination of surface parking, will help to screen the mass of the building and will double as groundwater recharge zones. The existing historic vehicular ellipse and monumental flag stand within the southern area of the site will be preserved."

The preliminary MSD landscape plans also adhere to the original 2011 Master Site Development Guide, expressing the intent to "incorporate native species endemic to the region to accentuate connectivity to the adjacent parkland" while simultaneously meeting Unified Facilities Criteria (UFC 3-201-02, *Landscape Architecture*), including LEED requirements applicable to the site. The MSD landscape design features the site's natural characteristics. It retains the unique environmental features of the steeply wooded slopes and vistas that characterize the Potomac Palisades. Bioretention facilities are seamlessly incorporated in landscape, designed to abstract the geologic form of the Potomac River and its rocky, island landforms

This preliminary MSD landscape design concept is also reflective of the Centrum NCPC submission in June of 2013, which is based on "creating an approximation of the form of the original river bluff at the time of development, through grading and using characteristic native vegetation and rock." The preliminary MSD landscape plan also follows the Centrum's focus on seamless integration of the groundwater recharge areas (bioretention) with the landscape aesthetics.

Landscape Concept Historical Context

The overall MSD planting concept is shown in Figure 8, reflecting the historically important elements associated with the site's mapping heritage—a flagpole and a globe sculpture accentuated by an open elliptical lawn—located in front of Erskine Hall. The plan maintains the integrity of this historical memorial setting.

These features, along with security requirements, are adeptly incorporated in the MSD landscape design, including provisions for site heritage interpretive features around the campus. The Historic Ellipse is preserved and retains its character with open lawn and plant materials framing the historic features of monumental flag stand.



The MSD's landscape design also reflects the established open space character of lawn and informally planted deciduous trees. Much of the area adjacent to the buildings—the Open Landscape—will be landscaped with low growing plant materials and function as groundwater recharge area.

Native Woodlands sweep across the face of the property along the southeastern corner of the campus along Sangamore Road and wrap the northern end of the campus between the road and the parking garage. A number of existing native specimen trees and ornamental trees have been field tagged to identify species and age and are incorporated into the MSD landscape palate; several of these trees are noted to be over 75 years old.

In addition to integrating these mature trees along the Streetscape, native shrubs and groundcovers are blended into the proposed street tree plantings, reinforcing an attractive and filtered edge along Sangamore Road.

The primary Entry for vehicles and pedestrians, at the intersection of the proposed serpentine entrance, Sentinel Drive and Sangamore Road, will be planted as a gateway, welcoming employees with a variety of plant materials in color and texture. The entrance is designed to highlight the historical elements of the campus as well as provide a sense of arrival to the campus.

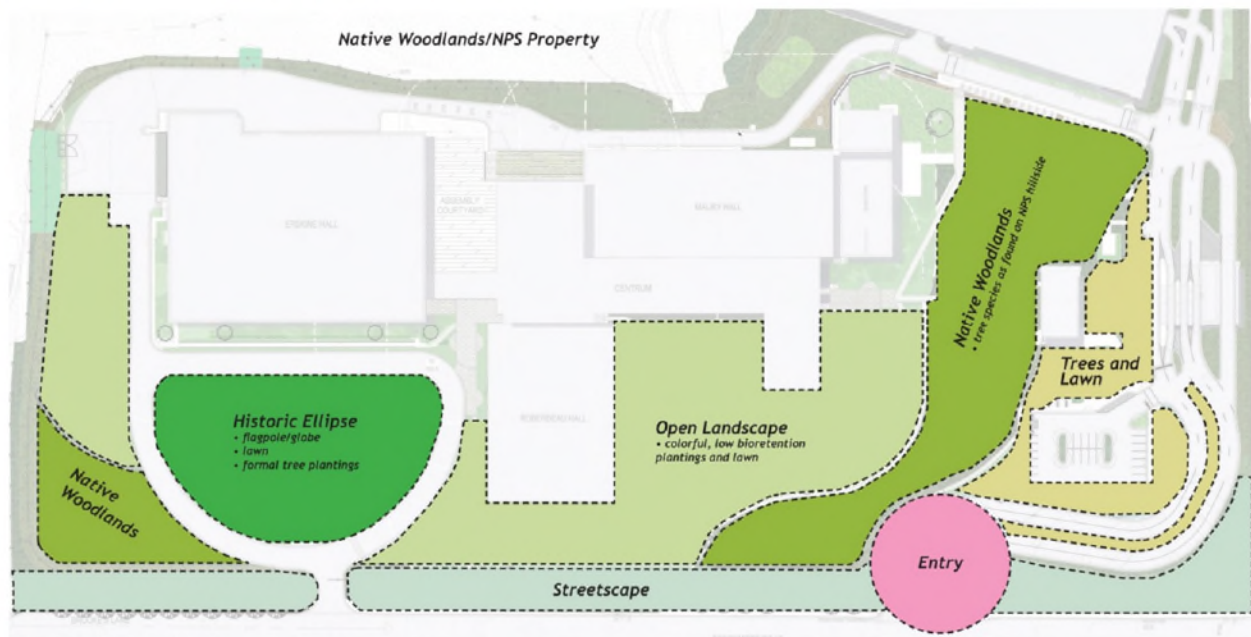


Figure 8: Preliminary MSD - Landscape Architecture planting concept

Concept Integration

Prior to developing the preliminary MSD landscape design, the design team inventoried existing work in progress to confirm elements to remain and new features to be integrated into the MSD plans to provide a seamless campus context. This included diagrammatic analysis of archival plans for the campus as well as recently approved landscape plans for the North Campus and for the Centrum projects, as well as foundation and façade plans for the renovations of Erskine and Roberdeau Halls.

The following figures demonstrate the evolution of the proposed MSD integrated landscape design for the entire campus, a plan that successfully and coherently weaves together the various project components into a coherent whole that reflects the historic context of the campus and its Potomac Palisades setting.

Existing Planting

The existing campus was mapped in 1959, with key trees noted on the diagram shown in Figure 9. A number of these trees remain and are highlighted with blue circles. The MSD Landscape Architecture plant list was partially drafted from the list of trees included on 1959 map, connecting the MSD work to the site’s historical context. Proposed species for the MSD landscape design drawn from this list include hickory, Virginia cedar, tulip tree, black gum and white oak.



Figure 9: 1959 Archival Planting Plan for the ICC-B site (trees remaining shown in blue)



North Campus Landscape Plan

The North Campus plantings highlighted in yellow on Figure 10 were installed in 2013 and 2014 in conjunction with the first phase of the redevelopment program (parking facility, new entrance, vehicle inspection station, and visitor control center). This figure highlights the need to relocate and replace some of the North Campus tree plantings when the final MSD serpentine entry road realignment is constructed and how the preliminary MSD landscape design plans to align them to produce a coordinated campus aesthetic.

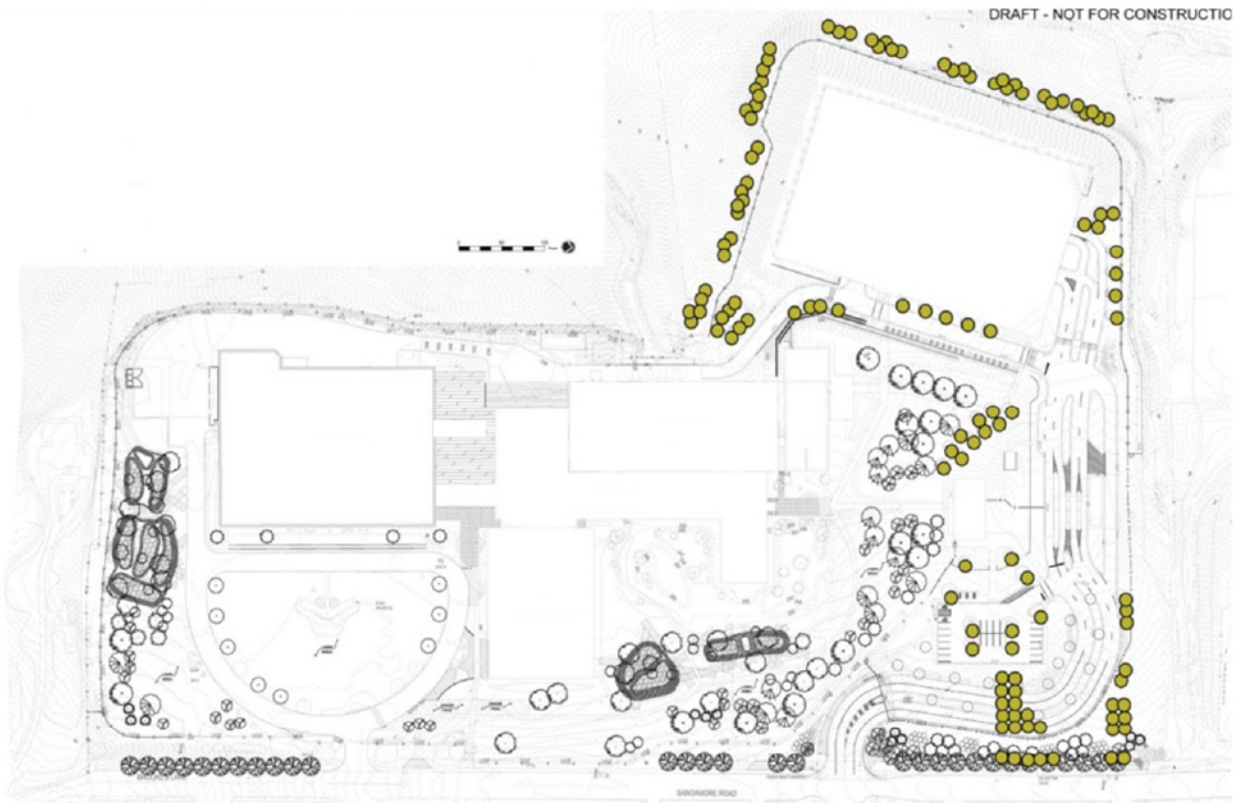


Figure 10: North Campus plantings (highlighted in yellow) on overall MSD campus background

Centrum Landscape Plan

The Centrum landscape design is composed of groundwater recharge zones on the eastern and northern sides of the building. These areas will be planted with river birch, black gum and serviceberry. This palette enables ready integration with the palette envisaged in the preliminary MSD concept and is extended and incorporated in additional groundwater recharge zones on the southern end of the campus. These Centrum plantings are currently scheduled for installation in 2015 as part of the final stages of the Centrum building program.

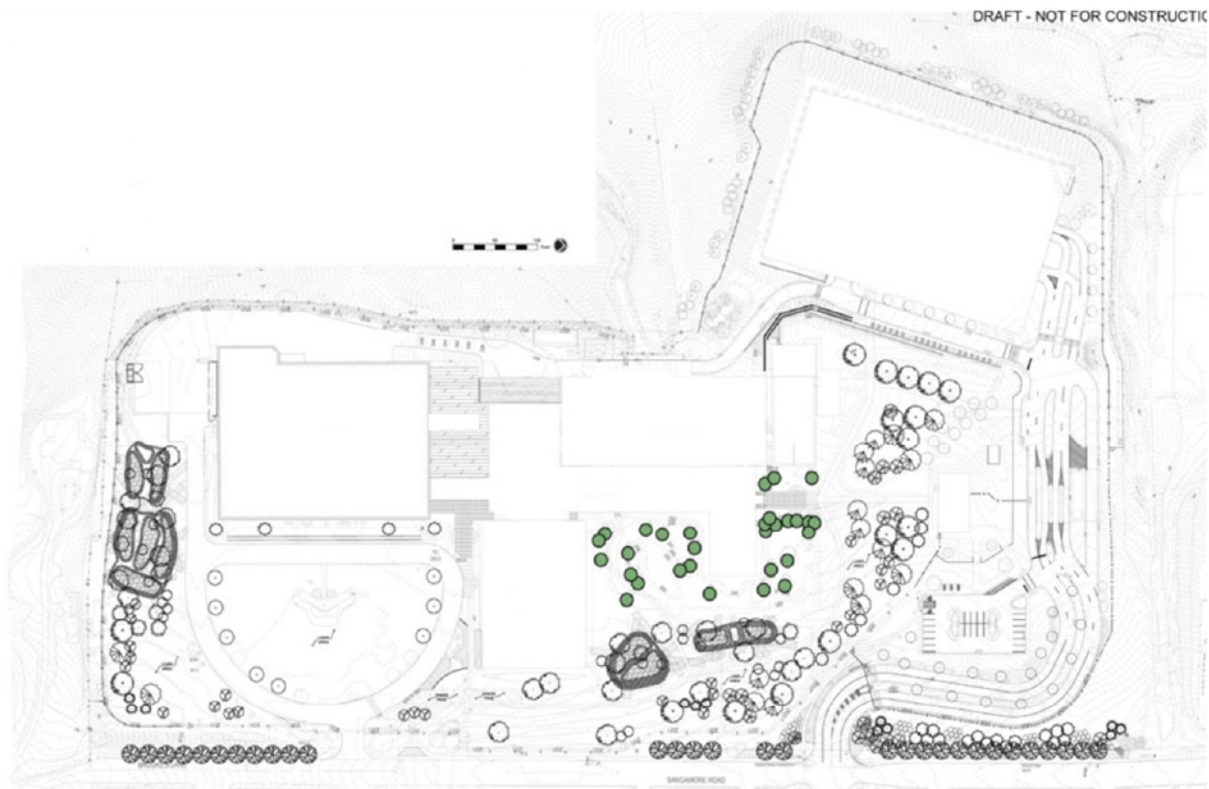


Figure 11: Centrum plantings (highlighted in green) on overall MSD campus background

MSD Integrated Landscape Plan

The preliminary MSD integrated landscape design effectively blends the historical site elements into the earlier phases of development to present a balanced perspective across the campus as highlighted in Figure 12. The various planting zones and site features associated with the MSD landscape plan are described in further detail below. The MSD plantings highlighted in red will be installed in sequence with the MSD implementation plan which is currently projected to extend into the 2017 timeframe.



Figure 12: MSD Integrated Landscape Design (MSD plantings highlighted in red)

The ICC-B presents a complex interior landscape architecture planning environment, with differing site conditions and desires for screening and varying security needs. The MSD – Landscape Architecture plan is subdivided into a series of ten planting zones and character areas that reflect specific design and security requirements applicable to the campus as shown on the zonal planning figure below.

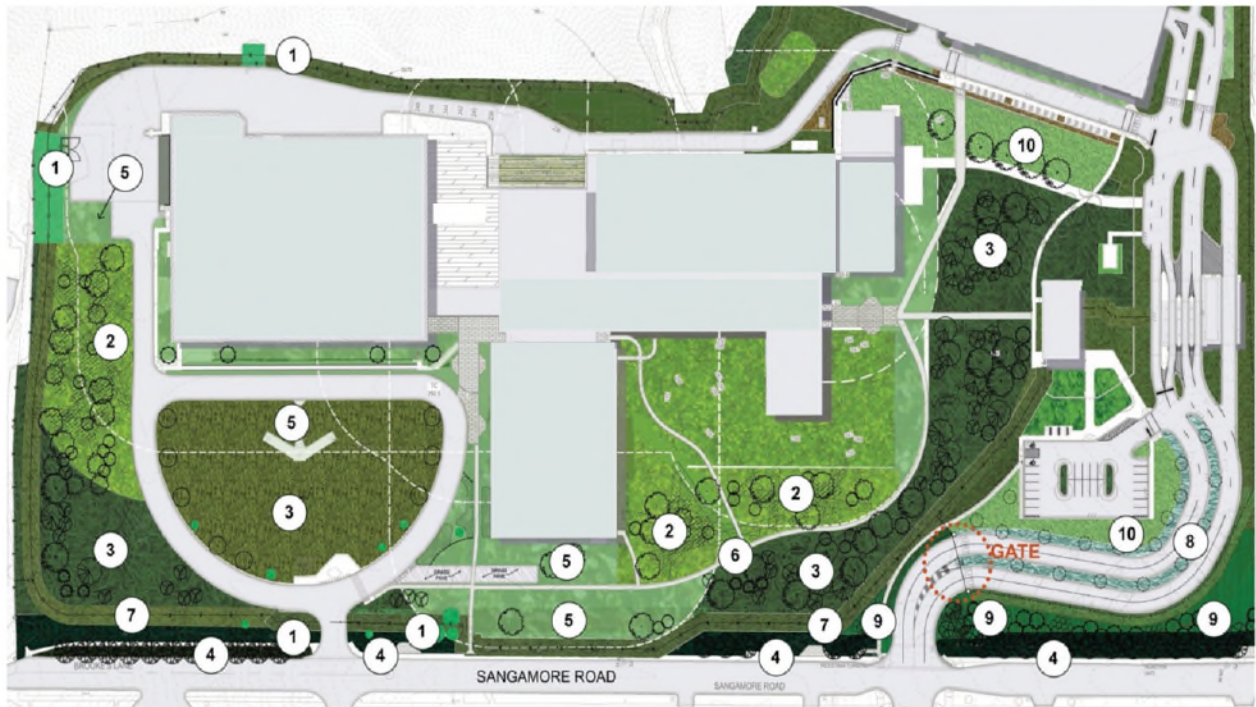


Figure 13.0: Preliminary MSD Landscape Zonal Plan

Zone 1: Specimen Tree Protection with Turf (Clearzone Restrictions)

This zone, actually numerous dispersed areas around the campus, presents the need to provide tree protection to established specimen trees. With the proposed realignment of the perimeter fence along the southern boundary of the campus, the southwestern corner of the campus requires special attention to ensure three trees—two American elms and one ash tree—are preserved and protected.

A separate specimen tree located on the western side of the campus behind Erskine Hall is also shown to be protected. Tagged willow oaks are located outside the eastern perimeter fence adjacent to the former main entry at the ellipse. A third willow oak is located at the southeastern corner of Roberdeau Hall. These trees are also noted to be protected during construction and integrated with the MSD landscaping plan for preservation of the historical site setting.

No new planting is proposed for Zone 1, tree protection will be required during construction (root pruning; aeration) and additional fence posts may be needed to minimize damage to tree root structure.

Zone 2: Bioretention (Clearzone Restrictions)

A landscape with an open and colorful landscape character; the existing bioretention (groundwater recharge area) incorporates two additional locations for surface stormwater treatment. One, aligned

with the apex of the Centrum, visually extends the bioretention features installed in conjunction with the Centrum phase of the ICC-B project. Edged by a sinewy paved walkway, the entire area between the Centrum and the walkway is envisioned to provide low-growing (6" maximum height), geometrically intriguing groundcover patterns.

The patterns reflect the abstracted Potomac River setting and incorporate river rock, emergent stone elements and low-growing and colorful, multi-textured plant materials (Figure 14). Located adjacent to large window walls in Roberdeau Hall and the Centrum, the patterns will be legible to those viewing them from upper floors of the buildings. Trees, pruned up 8' from the ground plane, will be planted amongst the low growing materials to scatter light and create integrated dappling highlights consistent with the riverine context.

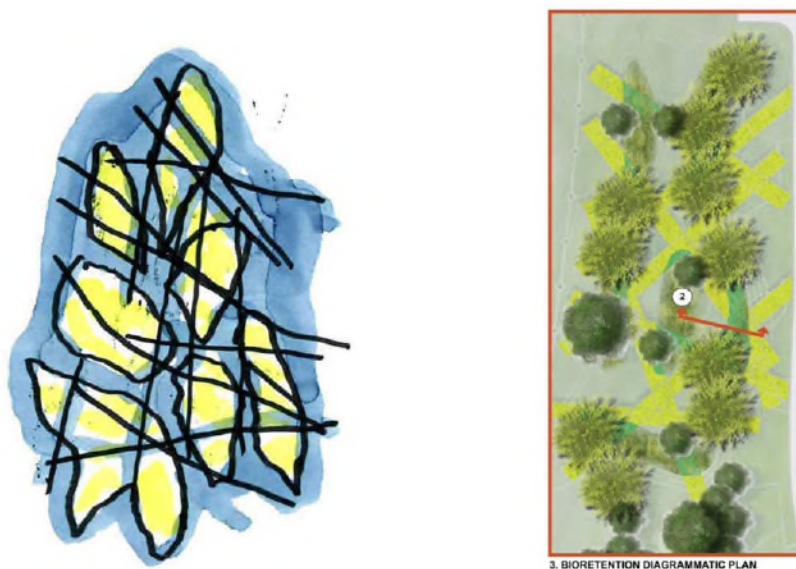


Figure 14: Abstract Potomac River and island landforms, (left); reflective bioretention and integrated plantings, (right)

Plantings within Zone 2 are designed around a 6 inch height restriction unless they can be limbed up to provide an 8-foot clearance. Shrubs and groundcovers may be periodically mowed to maintain the 6-inch height limit. The current design adds 37 deciduous trees at 3 ½" caliper size at installation in Zone 2.

Approximately 27,000 square feet will be covered with groundcover plants under 6 inches in height, (planted 18 inches on center). Another 22,000 square feet will be planted in turf. Tree species in this zone may include *Amelanchier arborea*, *Betula nigra* 'Heritage' or *Nyssa sylvatica*. Potential shrub and groundcover types in this zone may include *Phlox subulata*, *Sedum ternatum*, *Symphotrichum ericoides*, *Meehanian cordata*, *Delospermos cooperi*, *Sedum sp*, *Talinum calycinum* syn. *Phemeranthus calycinus*, *Aquilegia canadensis* 'Little Lanterns', *Bouteloua gracilis* 'Blonde Ambition', *Carex pensylvanica*, *Carex vulpinoidea*, *Iris cristata*, *Phlox subulata* or *Sisyrinchium angustifolium*.

Zone 3: Trees and Turf with No Restrictions

Areas designated in the Landscape Architecture planting concept as *Native Woodlands* unite the campus frontage as it faces Sangamore Road. Native tree species—similar to those found on the hillside below the campus—are planted in informal groves with turf. Reminiscent of a college campus with open lawn and shade producing tree cover, this landscape perimeter also reflects the lush plantings of the surrounding neighborhood.

There are no planting restrictions in terms of height within Zone 3. The entire ground surface (approximately 114,000 square feet) will be turf. The current design adds 69 deciduous trees at 2 ½ inch caliper at installation and 13 evergreen trees at 12'-14' height at installation.

Potential tree types in this zone include *Amelanchier arborea*, *Betula nigra* 'Heritage', *Carya glabra*, *Cercis Canadensis*, *Cornus florida*, *Ilex opaca*, *Juniperus virginiana*, *Liriodendron tulipifera*, *Nyssa sylvatica*, *Tilia cordata* 'Little Leaf' or *Quercus alba*.

Zone 4: Streetscape Plantings (per Montgomery County, MD, 2014)

The existing streetscape is appreciated by the surrounding neighborhood. The MSD Landscape Architecture plan respects the existing plantings and pattern; retaining the mature willow oaks and shrub plantings where possible while adding additional willow oaks along the existing sidewalk. The plant list, included on the preliminary MSD plans, reflects the Montgomery County Department of Transportation's Approved Street Trees list, 2014.

Streetscape planting north of the new entry to the campus includes an additional buffer of evergreen trees to screen headlight glare from vehicles existing the campus onto Sangamore Road (Figure 15) addressing an evening lighting concern raised during community meetings on the MSD conceptual approach. While MSD planting plans have been strategically configured to screen light emanating from the campus, plantings are also positioned to allow for filtered views of the campus from the public sidewalk. This avoids a monolithic aesthetic and connects to the campus to community as requested. Integrating the landscape design in this manner also enables the site to meet LEED Silver criteria for control of light pollution associated with campus operations.

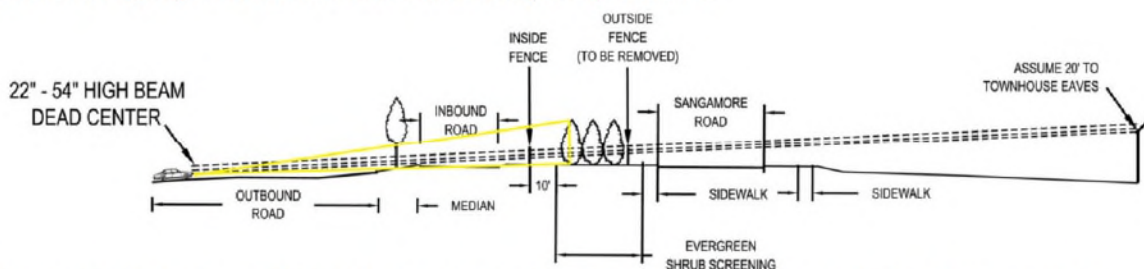


Figure 15: Preliminary MSD Light trespass mitigation plan for exiting vehicles at main entry

There are no planting restrictions in Zone 4. In addition to 30 deciduous trees at 3 inches in caliper at installation, Zone 4 will be planted with 20 additional shrubs at 18"-24" at installation and 14,440 square feet of groundcover near the entry area. Potential plant materials in this zone includes tree species, *Quercus phellos*, *Cercis Canadensis* or *Prunus x incamp* 'Okame' and shrub species *Azalea sp.*, *Viburnum*

rhytidophyllum, *Juniperus* sp., *Myrica pennsylvanica*, *Viburnum dentatum*, *Viburnum 'Pragense'*, *Calicarpa Americana*, *Viburnum prunifolium* or *Rhus aromatic*.

Zone 5: Trees and Turf with Restrictions

Zone 5 has security restrictions on plant materials, requiring that any trees be limbed up to provide 8 feet of clearance between the lowest branch and the ground. As no other plants are allowed to be higher than 6 inches, this area is planted with very low groundcovers, turf and limbed up trees. Its open and colorful landscape character is shared with the bioretention plantings in Zone 2.

The design in this zone includes 13 deciduous trees and 4 evergreen trees and 32 shrubs. Potential plant materials include tree species *Amalanchier arborea*, *Betula nigra 'Heritage'*, *Cornus florida*, *Juniperus virginiana* or *Tilia cordata 'Little Leaf'* and potential shrub and groundcovers include *Galtheria procumbens* or *Phlox subulata*.

Zone 6: Pigmented Concrete Walks

The pedestrian walk system serves as the boundary between the planting zones and design of the walkway paving palette will be coordinated with existing site hardscapes to ensure consistency in paving materials and colors.

Zone 7: Turf/River Rock Ribbon

A clear area of ten feet on either side of the fence line is required throughout the campus. In areas where sun is plentiful, turf is planted for approximately 38,000 square feet. In areas of heavy tree cover such as along the western and northern border, river rock/round stone (2" maximum) for approximately 6,000 square feet is proposed for the ground surface to reduce maintenance requirements; this could also potentially be done with mulch bedding materials, this will be rationalized further as the design progresses.

Zone 8: Trees and Turf Allee (Planting along Entrance Drive Median)

An allee of trees is located on the western side of the entry drive and in the median. It is intended that many of the tree plantings will be relocated from North Campus tree plantings due to the realignment of the entry drive. Spacing between the trees will be a generous 50' on center, ensuring that visibility is retained from the Entry Control Point to the main drive for security purposes. Turf or low groundcovers will be used at the ground level. It is the intent that 16 trees from the North Campus planting be relocated within this zone, (*Gleditsia triacanthos 'Skyline'*).

Zone 9: Gateway Plantings

Greeting the visitor and the employee, the northeastern edge of the campus adjacent to Sangamore Road will be planted with an attractive colorful mixture of plant materials integrated to accentuate the historic interpretive elements while providing filtered views into the campus from the public sidewalk.

A main entry sign, with the building address noted, will be located in this area. Stone pillars, faced with sandstone recovered from the demolition of the Erskine Hall façade, frame the ornamental fencing and entry gates (Figure 16). Materials planted as part of the North Campus construction will be retained in place or relocated and incorporated within the landscape design, consistent with LEED reuse criteria.



Eight deciduous trees and 16 evergreen trees will be planted in this zone, along with 50 large shrubs and 42 medium shrubs. The ground will be planted with groundcovers, no turf to be used in Zone 9. Potential tree species include *Cercis Canadensis*, *Ilex opaca*, *Juniperus virginiana* or *Prunus x incamp* 'Okame'. Shrub species may include *Aesculus parvifolia*, *Calicarpa Americana*, *Viburnum 'Pragense'* (broadleaf evergreen) or *Viburnum prunifolium*. Groundcovers may include *Hemerocallis sp.*, *Hypericum perforatum* or *Rhus aromatic*.



Figure 16: Preliminary MSD main entry gate section looking north toward Waldorf School – Zone 9

Zone 10: Low Shrubs; Occasional Tree with No Restrictions (sloped area)

There are several areas of the campus where slopes are relatively steep and an alternative to turf planting is proposed. The landscape plan for this area envisions tree plantings at a relatively low density amongst shrub ground coverings.

Seven deciduous trees are proposed in this zone, potentially relocating some from the North Campus. Tree species may include *Gleditsia triacanthos* 'Skyline' (transplanted) or *Quercus alba*.

This zone includes informal plantings along the southern and eastern boundaries of the campus using a mixture of deciduous and coniferous trees and shrubs to achieve a layered and filtered screen along these edges. Not intended to be a wall, openings along the eastern boundary are provided to provide filtered views into the site. Screening of the parking facility perimeter is currently evolving a part of the North Campus plan, integrating the green screening of the facility with improved tree plantings. This will be monitored as the MSD progresses and additional elements incorporated into the final NCPC planning submission as appropriate.

These ten planting zones are woven into the site to develop the overall character of the site as shown in Figure 16. This preliminary MSD Landscape Architecture plan protects and accentuates the historic site elements; provides sufficient trees, shrubs, and other elements to screen views; and constructs a sustainable, secure campus environment reflective of operational requirements and community needs.

A Coherent Master Site Landscape Plan

The preliminary MSD landscaping plan will be attractive, coherent and seamless between the North Campus, Centrum and MSD phases of the site's development. The planting design responds to the surrounding community's landscape and re-establishes connectivity to the woodlands on the NPS property as shown on Figure 17.



Figure 17: Preliminary MSD Integrated Landscape Plan

Heritage Interpretive Trail and Signage

In addition to these green landscaping features, the preliminary MSD Landscape Architecture plan includes signature elements configured to provide interpretive perspectives of the site history to the passing public, employees and distinguished visitors.

These exhibits and perspectives are envisaged to provide a chronology of site development and interpretive record of the significant contributions of the cartographic research and production professions housed at the site from 1942-present, connecting this rich history to the vital future missions programmed for the campus.

These interpretive exhibits will be configured to provide publicly accessible perspectives into the campus along Sangamore Road, with additional interpretive monuments integrated to main personnel entry areas within the controlled perimeter for employees and authorized site visitors.

Figure 18 presents the overall scheme for layout of these exhibits, including three principal public viewing areas along Sangamore Road created with interpretive signage and archival elements from the building facades.

Area A is the monumental entry drive gate; the gate pillars are designed to incorporate sandstone elements from Erskine Hall in the multiple columns of the entry gate.

The Area B series of exhibit areas are outside of the fence along the publicly accessible sidewalk where interpretive signage and viewing stations are proposed. The sites are coordinated with the existing public bus stops and employee pedestrian entrance areas.

Area C identifies potential areas within the internal campus for additional interpretive opportunities;

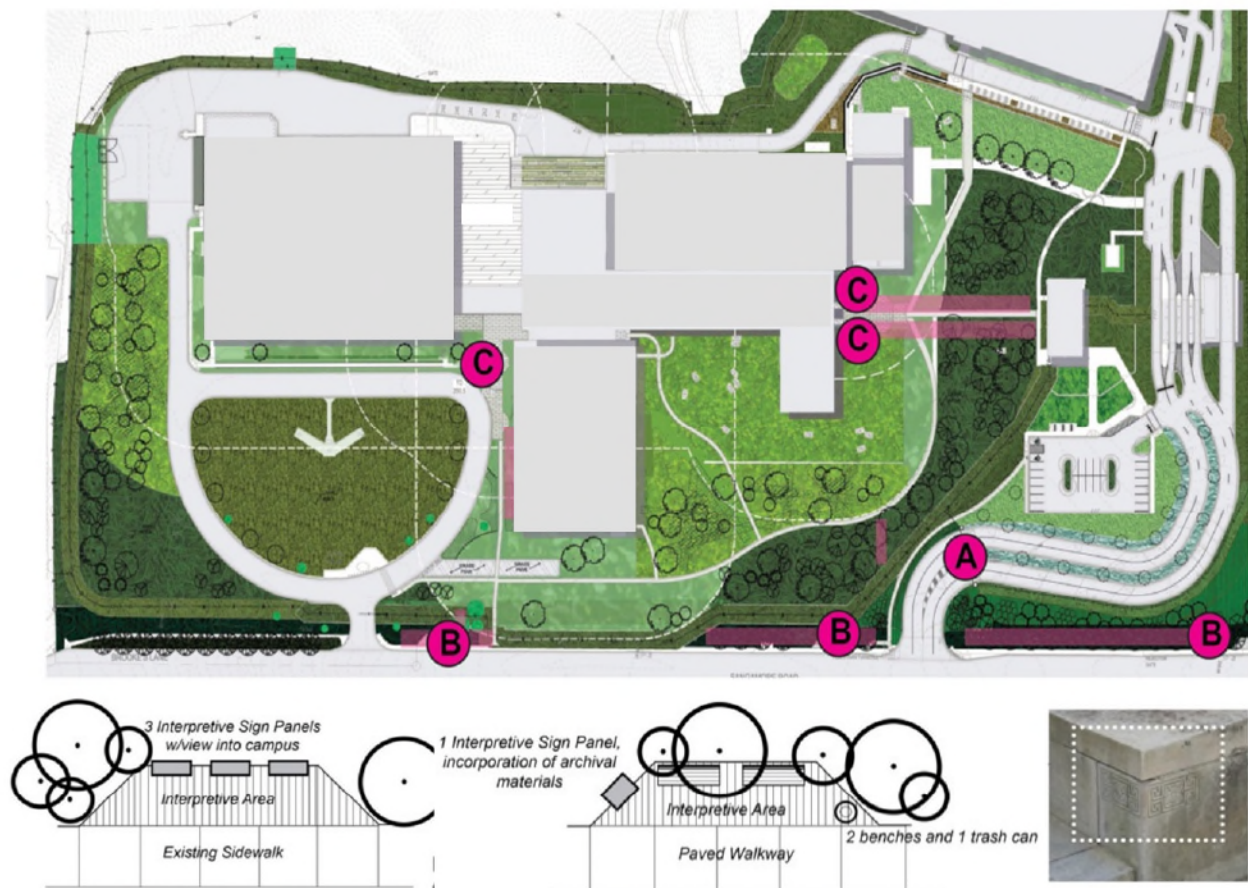


Figure 18: Proposed history and heritage interpretive displays; sandstone element (right)

f. Site demolition

The overall scope of site demolition work related to the MSD is highlighted in Figure 19 below. The areas highlighted in orange indicate building demolition activity that is associated with other phases of work, (Former VCC, Emory Building and Central Energy Plant ICC-B project work) the MSD project will only be responsible for removing residual foundation slabs and underground building services in these areas when they are integrated into the MSD grading and drainage plans.

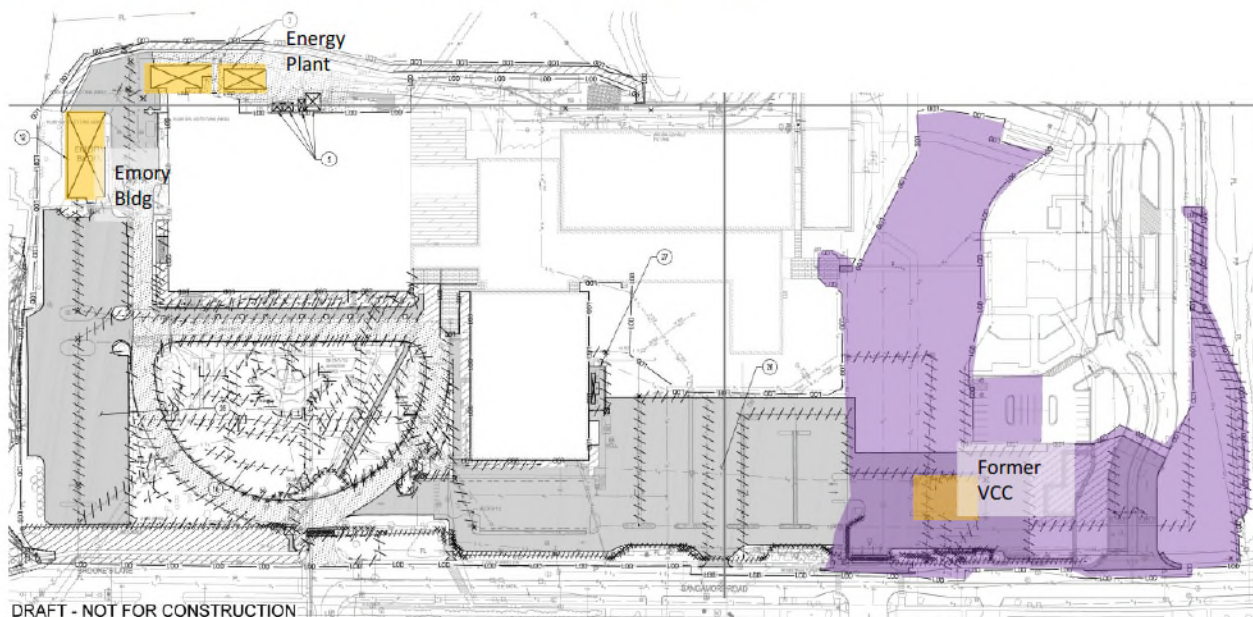


Figure 19: ICC-B General Campus Demolition Plan

The demolition of the old VCC building was completed in conjunction with renovation of Roberdeau Hall in early 2014. The demolition of Emory Building is programmed in conjunction with the Erskine Hall renovations later in 2016. The demolition of the Erskine Utility Plant and provision of new utility services (Energy Plant) is being coordinated with a broader campus energy performance contract and will be accomplished as an independent effort scheduled to begin in the mid-2015. The MSD will continue to work with these additional initiatives to develop an integrated site design.

The area shown in purple highlights where the MSD will need to integrate work from the North Campus with the final MSD campus access and landscaping improvements, including the relocation of the primary entrance developed during the North Campus project work. The MSD will include reconfiguration of the entrance to the serpentine configuration consistent with earlier site planning requirements to align the ICC-B entrance with Sentinel Drive to reduce traffic impacts.

General demolition within the designated MSD area will be coordinated with the various ongoing renovation and new construction activities and is primarily targeted on removing residual utilities and ground features that are not required for future work or that may conflict with final design plans. Select demolition will include those features required to meet security, vehicle and pedestrian circulation needs, stormwater management, and utility service needs of the site.

General pavement demolition in the MSD will include the parking areas at the south end of Erskine Hall and the residual elements of parking left between Sangamore Road and the Centrum and Roberdeau Hall. This will include the concrete and asphalt remaining after demolition of the old VCC area near Sangamore Road as well as all residual area light poles, utilities and signage associated with existing pavements to be removed. This residual VCC demolition work will be phased such that the new serpentine entrance road can be developed prior to removing the “new” North Campus entrance to avoid traffic disruptions into the site and to ensure continuity of required site security measures.

MSD demolition activity around the ellipse (the historically significant flagpole and globe feature) will be limited to removal of the access sidewalk across the lawn area, the potential removal of the existing landscape irrigation system (as required to comply with site LEED criteria) and renovation of the existing driveway pavement (profile and overlay only).

Current preliminary MSD plans call for the profile and overlay of all pavement within the ellipse area and replacement of curb and gutter to provide a consistent surface (repairing incidental construction phase damage) and incidental pavement removal required to match new drainage features installed as part of MSD. The parking areas south of the ellipse including the area currently used for temporary construction offices will be removed. The temporary utilities and construction trailers are expected to be removed by the site contractor and are not included in the preliminary MSD scope.

The preliminary MSD concept calls for a new ornamental fence to be installed from the new North Campus VCC building out to the sidewalk along the southeast side of Sangamore Road and down Sangamore Road to just past the Ellipse entry control point (ECP). This fence will replace the existing chain link fence along Sangamore Road.

As part of this new ornamental fencing, existing bollards, gates and other barriers along Sangamore Road will be removed, including the southern pedestrian turnstile at the Ellipse ECP driveway. The existing vehicle security gate and hydraulic bollards at this south entrance will also be removed and replaced as part of the MSD site development effort. Currently the MSD concept includes reuse of the existing pedestrian turnstile location (employee entrance) adjacent to Roberdeau Hall, redeveloping this turnstile location as one of the two automated pedestrian entries into the campus.

The preliminary MSD will renovate the existing perimeter chain-link fencing along the southeastern and southwestern property lines from the corner with Sangamore Road around to the North Campus tie-in behind Maury Hall, maintaining existing building standoff distances in this area. A new interior chain link fence will be provided 10-feet inside this existing fenceline, creating a double fenceline with required clear zones maintained on either side of the interior fence.

In some areas behind Erskine Hall this “inter-fence” clearzone is less than 10-feet wide due to existing property line limitations. The MSD will include clearing existing vegetation and landscaping along these perimeter fence lines, (except specimen trees) to provide required clear zones and unobstructed space near buildings. All clearing will be limited to work within the existing ICC-B property boundaries. Vegetation in these areas is restricted to a maximum height of 6-inches at plant maturity. In order to



reduce nuisance vegetation maintenance requirements along the back of Erskine Hall the preliminary MSD design documents include an infill of mulch or gravel between the fencing to reduce the need for mowing and clear zone maintenance in this area.

There are several specimen trees around Emory Building, the south campus entrance and Erskine Hall that encroach within these clear zones and any limbing or removal of these trees will be closely evaluated to limit site development impacts and ensure consistency with community commitments to preserve existing specimen trees. Specimen trees will be protected to the maximum extent practicable in accordance with campus community commitments.



g. Primary and secondary utilities

There will be minimal demolition impact on primary and secondary utilities due to MSD initiatives. Primary impacts will be confined to re-routing storm drainage at the south end of the campus between Erskine Hall and Emory Building to eliminate the current drainage outfall behind Erskine Hall as discussed with regional planning authorities and MDE.

The preliminary MSD concept therefore includes replacement of the storm drainage structures and pipes on the south side of Erskine Hall, using revised surface grading to re-route drainage to new stormwater management features that provide on-site stormwater treatment and runoff volume reduction consistent with campus MDE and EISA 438 program requirements.

There are no further MSD requirements to relocate or remove any potable water, fuel oil, or natural gas utilities. The ICC-B site has adequate water and sewer services and no additional services are planned as part of the MSD. The existing dual water feeds from DC Water and the Dale-Carla sources will be maintained to provide redundant water sources for the campus.

As the independent effort to replace the Erskine Energy Plant is developed, construction phasing and MSD utility coordination will need to be considered to integrate any new utility services required as part of that initiative. Site access roadways have been designed to provide access for heavy trucks for incidental delivery of large equipment or periodic fuel deliveries for building systems.

The secondary electrical duct banks that provide power to existing parking lot lighting will be completely removed as part of the preliminary MSD. The sanitary sewer pipe that serves Emory Hall is also called for removal as part of preliminary MSD work. Similarly storm drainage structures and pipes that served the old VCC will be removed as part of the MSD project.

Site lighting will also be provided for the primary pedestrian access routes to the buildings and the emergency egress routes. All lighting will be designed to minimize light leaving the site consistent with LEED criteria, security needs and community concerns. The exterior lighting fixtures and lighted bollard fixtures previously approved by NCPC on the North Campus project will be used throughout the campus to provide a consistent campus aesthetic as part of the MSD.

Light poles for perimeter lighting and cameras will be installed at approximately 150 foot intervals or as needed to provide a complete view of the perimeter and required lighting levels while minimizing light trespass outside the site boundaries. These features incorporated in the preliminary MSD utilize campus standards and equipment details established on the North Campus project, including CCTV equipment, lights, mounting poles, security systems and support infrastructure.

No additional utility service connections are planned to commercial utility providers as part of the MSD project. Adequate internal campus utility services have been coordinated on the other campus projects.



h. Schedule for construction

Construction of the MSD initiatives is slated to commence in the fall of 2016 with completion currently programmed in 2017. Project execution and phasing is subject to federal funding availability.

i. Total estimated cost of project and funding status

The preliminary estimate of construction cost for the MSD is expected to be between \$6,000,000 and \$8,000,000 depending on phasing and final design scope.

j. Transportation Management Plan (TMP)

The preliminary MSD is consistent with the site Transportation Management Plan and has been coordinated with the ICC-B transportation committee. There are no expected impacts to the existing ICC-B site transportation plan associated with implementation of the MSD initiatives.

Construction phasing and implementation will be coordinated to minimize temporary disruptions to site access and construction plans will include provisions to maintain emergency vehicle and equipment access at all times.

2. ENVIRONMENTAL DOCUMENTATION

This preliminary MSD is consistent with the Environmental Assessment (EA) and accompanying Finding of No Significant Impact (FONSI) prepared in 2011 for the site in accordance with the National Environmental Policy Act (NEPA).

Given the project's location outside of the District of Columbia in Bethesda, Maryland, the Commission does not have independent responsibilities for the NEPA documentation prepared for this project.

3. HISTORIC PRESERVATION DOCUMENTATION

The Maryland Historical Trust, Maryland State Historic Preservation Office (SHPO) has reviewed the master plan for the ICC-B and found that implementation of the ICC-B project will have an adverse effect upon Erskine Hall, which is eligible for listing in the National Register Historic District.

The Defense Intelligence Agency and the SHPO have entered into a Memorandum of Agreement (dated October 14, 2011) that will ensure that the project is implemented in accordance with certain stipulations that take into account the effect of the undertaking on historic properties.

These stipulations include the retention of Erskine, Maury, and Roberdeau Halls (excluding the brick facades) and retention of the Flagstand and Globe; amending the Maryland Inventory of Historic Properties Form for the site to include the information gathered in the Determination of Eligibility for Emory, Abert, Roberdeau, and Maury Halls; and the development and implementation of a landscape plan to maintain the integrity of the Flagpole and Globe Memorial's setting. Given the project's location in Bethesda, Montgomery County, Maryland, the Commission does not have independent responsibilities under NHPA.

This preliminary MSD plan was reviewed with the SHPO representatives in June, 2014 and it was found to be consistent with earlier dialogue and discussion on site resource preservation and no additional historical resource requirements were noted as part of the MSD concept.

4. FLOODPLAIN MANAGEMENT AND WETLANDS PROTECTION

This preliminary MSD plan will not directly or indirectly impact any mapped floodplain or wetland areas. No work in active waterways or state or federal waters of the state is currently included in the MSD scope of work.

Site construction initiatives will include appropriate measures to limit the potential for off-site migration of soil, sediment, debris or other polluting elements to regional waterways.



National Capital Planning Commission

Preliminary Submission

January 30, 2015

APPROVED FOR PUBLIC RELEASE 2/13/15

ICC-B Master Site Development

Volume II – Project Drawings

Intelligence Community Campus – Bethesda, MD

W912DR-13-D-0026 T.O. #25

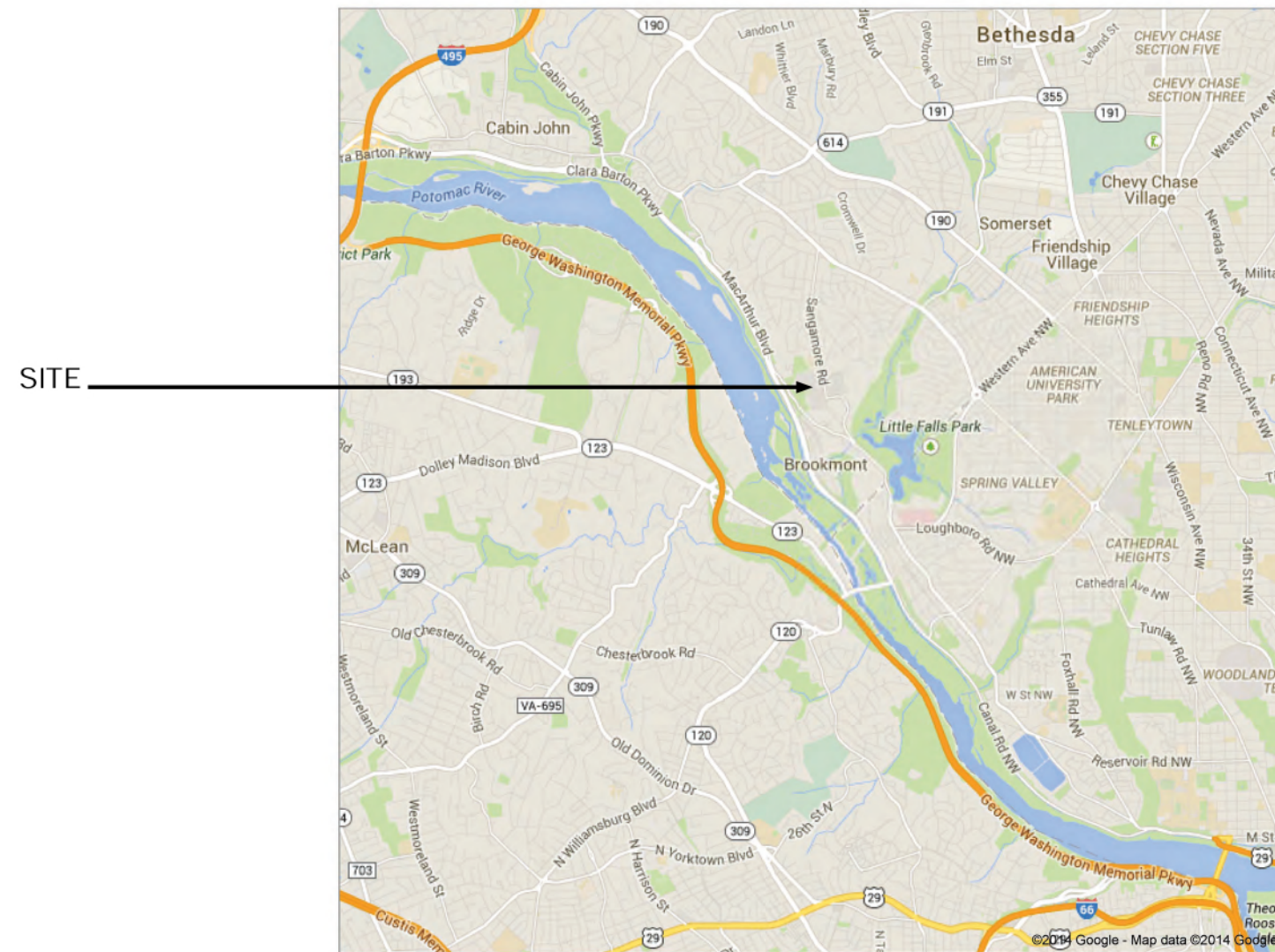
NCPC File Number 7326





NCPC PRELIMINARY SUBMISSION

Original cover image from NCPC Final Submission (modified to show rendered Centrum)
Roberdeau & Erskine Halls Facades and Interior Demolition Expansions
January 31, 2014 (modified 11/21/14)



- G1 COVER
- G2 INDEX & VICINITY MAP
- L2 CAMPUS LANDSCAPE CONCEPT PLAN
- L3 PRE-SOUTH CAMPUS LANDSCAPE PLANTINGS
- L4 INTEGRATED LANDSCAPE DESIGN CONCEPT
- L5 SITE PLAN PLANTING DIAGRAM
- L6 PERSPECTIVE 1 'VIEW FROM SANGAMORE ROAD AND INTERPRETIVE OPPORTUNITIES
- L7 SECTION/PERSPECTIVE 2 'VIEW FROM SANGAMORE ROAD'
- L8 LANDSCAPE DESIGN - BIORETENTION PLANTINGS



- 1 MAIN VEHICLE ENTRANCE
 - 2 ENTRY DRIVE
 - 3 OUTBUILDING
 - 4 VISITOR CONTROL CENTER
 - 5 ENTRY COURT, MAIN ENTRANCE AND INTERPRETIVE AREA
 - 6 MAURY HALL
 - 7 CENTRUM BUILDING
 - 8 ROBERDEAU HALL
 - 9 ERSKINE HALL
 - 10 COURTYARD
 - 11 SECONDARY ENTRANCE
 - 12 SECONDARY VEHICLE ENTRANCE
 - 13 OUTBUILDING
 - 14 HISTORIC FLAG DISPLAY/GLOBE AND ELLIPSE
 - 15 WALKING PATH
 - 16 VISITOR PARKING LOT
 - 17 PEDESTRIAN BRIDGE
 - 18 PARKING GARAGE
 - 19 SUPPORT BUILDING
 - 20 GREEN ROOF
 - 21 PROTECTED FOREST
 - 22 BIORETENTION
 - 23 WOODED LAWN
 - 24 HERITAGE INTERPRETIVE SIGN
A. VIEW TOWARDS ELLIPSE AND ERSKINE
B. VIEW TOWARDS ROBERDEAU
C. VIEW TOWARDS MAURY
 - 25 FENCE
 - 26 M-NCPPC TRAILHEAD
- SOUTH CAMPUS LOD - - - - -

L2 Campus Landscape Concept Plan



TREE LEGEND










TREE COVER






Dominant Tree Species

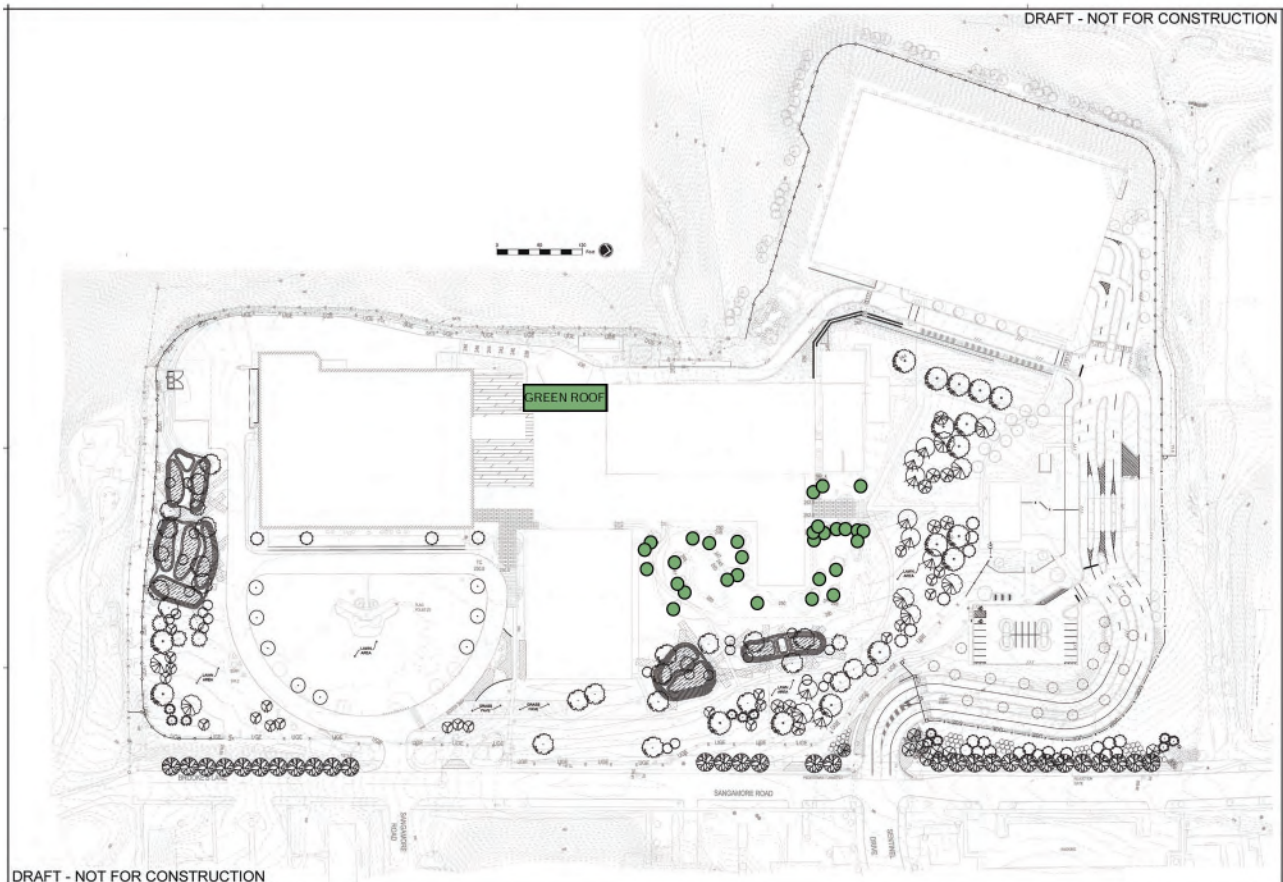
Scientific Name	Common Name	Scientific Name	Common Name
<i>Acer negundo</i>	Box elder	<i>Morus rubra</i>	Mulberry
<i>Acer rubrum</i>	Red maple	<i>Nyssa sylvatica</i>	Black gum
<i>Carpinus caroliniana</i>	Blue beech	<i>Pinus strobus</i>	White pine
<i>Cornus florida</i>	Dogwood	<i>Platanus occidentalis</i>	Sycamore
<i>Crataegus</i> (spp.)	Hawthorn	<i>Populus deltoides</i>	Eastern poplar
<i>Fagus grandiflora</i>	American beech	<i>Quercus alba</i>	White oak
<i>Fraxinus americana</i>	White ash	<i>Quercus marilandica</i>	Blackjack oak
<i>Fraxinus pennsylvanica</i>	Red ash	<i>Quercus montana</i>	Chestnut oak
<i>Hicoria cordiformis</i>	Bitternut hickory	<i>Quercus palustris</i>	Pin oak
<i>Hicoria glabra</i>	Pignut hickory	<i>Quercus phellos</i>	Willow oak
<i>Juglans nigra</i>	Black walnut	<i>Quercus rubra</i>	Red oak
<i>Juniperus virginiana</i>	Red cedar	<i>Robinia pseudoacacia</i>	Black locust
<i>Liquidambar styraciflua</i>	Sweet gum	<i>Salix</i> (spp.)	Willow
<i>Liriodendron tulipifera</i>	Tuliptree	<i>Tilia americana</i>	Basswood
		<i>Tsuga canadensis</i>	Hemlock
		<i>Ulmus americana</i>	American elm

1959 MAPPING WITH DOMINANT TREE SPECIES FOR SUMNER AND DALECARLIA SITES

1959 RECORD OF PLANTINGS

- NORTH CAMPUS TREES**
-  PLATANUS ACERIFOLIA 'BLOODGOOD'
 -  MAGNOLIA STELLATA
 -  PINUS RIGIDA
 -  GLEDITSIA TRIACANTHOS 'SKYLINE'
 -  PINUS ECHINATA + PINUS VIRGINIANA
 -  ACER RUBRUM 'RED SUNSET'
 -  CARPINUS BETULUS 'FASTIGIATA'
 -  TILIA CORDATA
- NORTH CAMPUS SHRUBS**
-  SHRUB OR VINE
- NORTH CAMPUS PLANTINGS**

- CENTRUM TREES
-  ACER RUBRUM
-  NYSSA SYLVATICA
-  BETULA NIGRA
-  AMELANCHIER ARBOREA
-  CENTRUM PLANTINGS



SOUTH CAMPUS CANOPY TREES

- BETULA NIGRA
- CARYA GLABRA
- TILIA CORDATA
- LIRIODENDRON TULIPIFERA
- NYSSA SYLVATICA
- QUERCUS ALBA
- QUERCUS PHELLOS
- GLEDITSIA TRIACANTHOS 'SKYLINE'
(TRANSPLANTED FROM NORTH CAMPUS)

SOUTH CAMPUS ORNAMENTAL TREES

- AMELANCHIER ARBOREA
- CORNUS FLORIDA
- CERCIS CANADENSIS

SOUTH CAMPUS EVERGREEN TREES

- ILEX OPACA
- JUNIPERUS VIRGINIANA

SOUTH CAMPUS SHRUBS

- VIBURNUM PRUNIFOLIUM
- VIBURNUM 'PRAGENSE' (BROADLEAF EVERGREEN)
- CALICARPA AMERICANA

SOUTH CAMPUS GROUNDCOVER

- BIOBASIN GROUNDCOVER

CENTRUM TREES

- ACER RUBRUM
- NYSSA SYLVATICA
- BETULA NIGRA
- AMELANCHIER ARBOREA

NORTH CAMPUS TREES

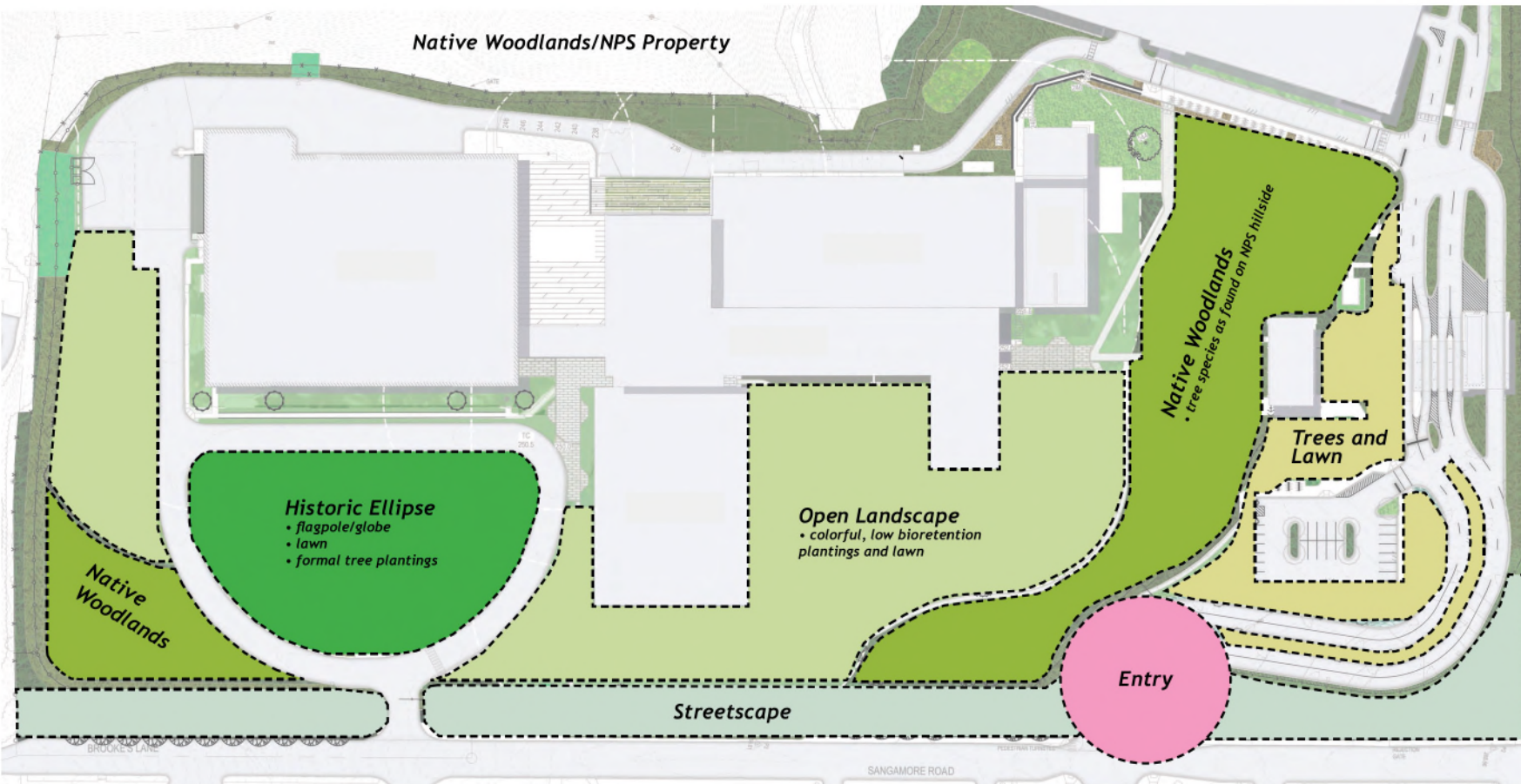
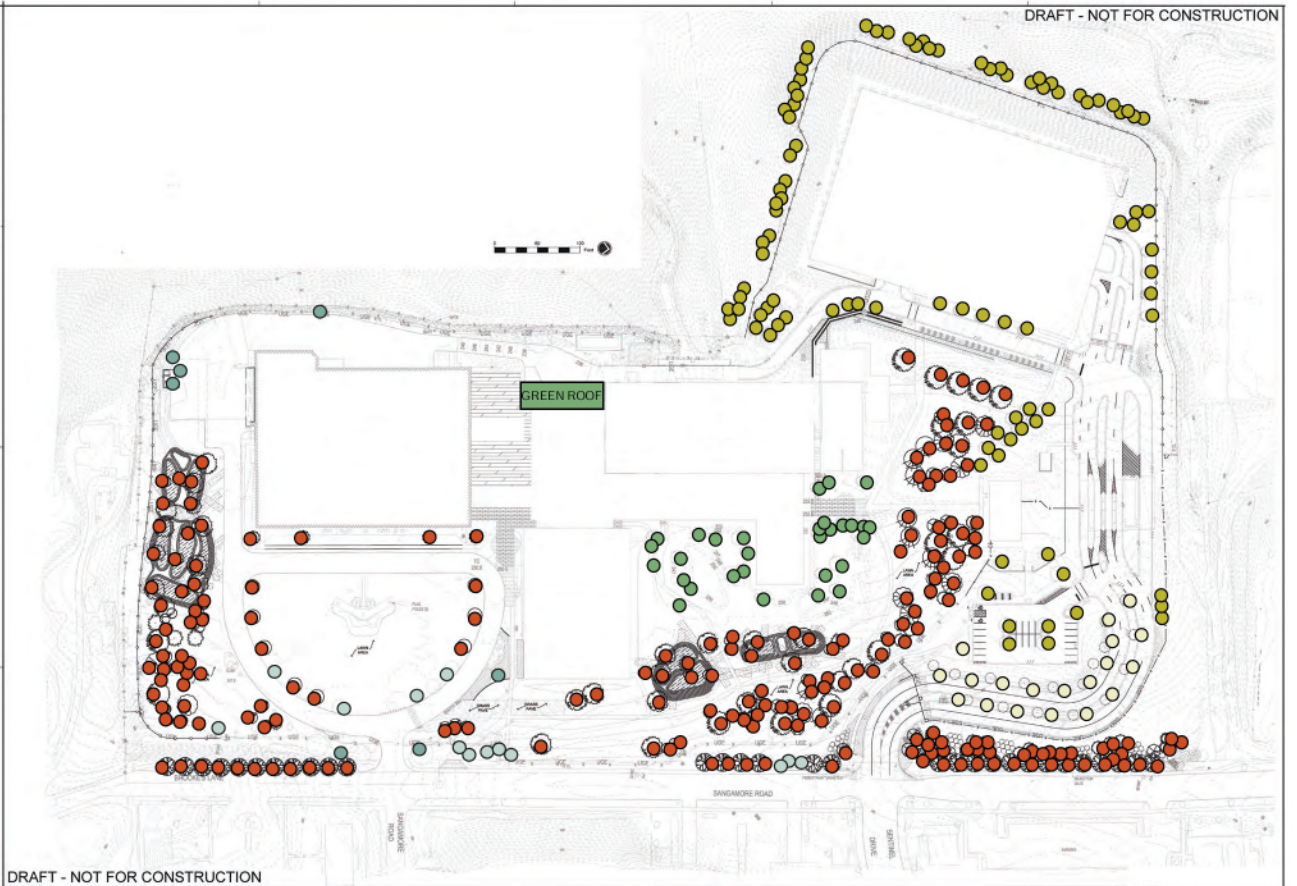
- PLATANUS ACERIFOLIA 'BLOODGOOD'
- MAGNOLIA STELLATA
- PINUS RIGIDA
- GLEDITSIA TRIACANTHOS 'SKYLINE'
- PINUS ECHINATA + PINUS VIRGINIANA
- ACER RUBRUM 'RED SUNSET'
- CARPINUS BETULUS 'FASTIGIATA'
- TILIA CORDATA

NORTH CAMPUS SHRUBS

- SHRUB OR VINE

- 1959 PLANTINGS REMAINING ON SITE IN 2014
- EXISTING PLANTS TO REMAIN
- NORTH CAMPUS PLANTINGS
- CENTRUM PLANTINGS
- SOUTH CAMPUS MASTER SITE PLAN PLANTINGS

INTEGRATED PLANTINGS: HISTORIC; NORTH CAMPUS; CENTRUM; SOUTH CAMPUS



INTEGRATED PLANTINGS: LANDSCAPE DESIGN CONCEPT

1 SPECIMEN TREE PROTECTION

2 BIORETENTION
(6" MAX HEIGHT RESTRICTION FOR SHRUBS AND GROUNDCOVER - MOW TO MAINTAIN 8' CLEARANCE FROM GROUND PLANE FOR TREES)



Potential Plants for Bio Bays

- Amelanchier arborea***
- Betula nigra* **
- Nyssa sylvatica***
- Aquilegia canadensis* 'Little Lanterns'
- Bouteloua gracilis* 'Blonde Ambition'
- Carex pensylvanica***
- Carex vulpinoidea***
- Delospermos cooperi*
- Iris cristata***
- Meehanian cordata*
- Phlox subulata***
- Sedum sp*
- Sedum ternatum*
- Sisyrinchium angustifolium***
- Symphotrichum ericoides*
- Talinum calycinum* syn. *Pheermeranthus calycinus*

River stone and boulders
** same species as Centrum plantings

3 TREES + TURF
(NO RESTRICTIONS)



* same species as North Campus
** same species as Centrum plantings

4 STREETSCAPE PLANTINGS

Potential Plants
Quercus phellos

Cercis canadensis
Prunus x incamp 'Okame'

Azalea sp.
Callicarpa Americana
Juniperus sp.
Myrica pensylvanica
Rhus aromatic
Viburnum dentatum
Viburnum 'Pragense'
Viburnum prunifolium
Viburnum rhytidophyllum



5 TREES + GROUNDCOVER + TURF
(6" MAX HEIGHT RESTRICTION FOR SHRUBS AND GROUNDCOVER - MOW TO MAINTAIN 8' CLEARANCE FROM GROUND PLANE FOR TREES)



* same species as North Campus
** same species as Centrum plantings

Potential Plants for Trees + Groundcover + Turf (w/restrictions)
*Betula nigra***
Cornus florida
Juniperus virginiana
*Tilia cordata**
Gaultheria procumbens
Phlox subulata

6 PIGMENTED CONCRETE WALKS



7 TURF/RIVER ROCK RIBBON
(10' CLEAR ON EITHER SIDE OF FENCE)



8 TREES + TURF ALLEE



Potential Plants for Trees + Turf Allee
Gleditsia triacanthos 'Skyline' (transplanted)*

9 GATEWAY PLANTINGS

Potential Plants for Gateway Plantings

Cercis Canadensis
Ilex opaca
Juniperus virginiana
Prunus x incamp 'Okame'

Aesculus parvifolia
Callicarpa Americana
Viburnum 'Pragense'
Viburnum prunifolium

Hemerocallis sp.
Hypericum perforatum
Rhus aromatic



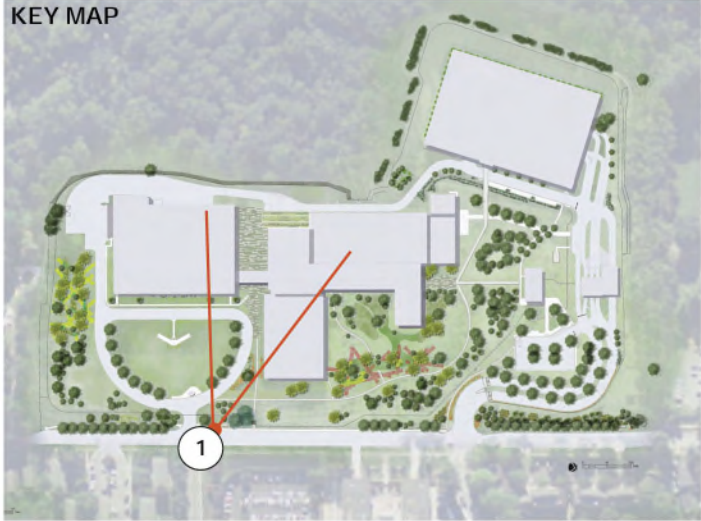
GATE ELEVATION

10 LOW SHRUBS + OCCASIONAL TREES
(NO RESTRICTIONS)

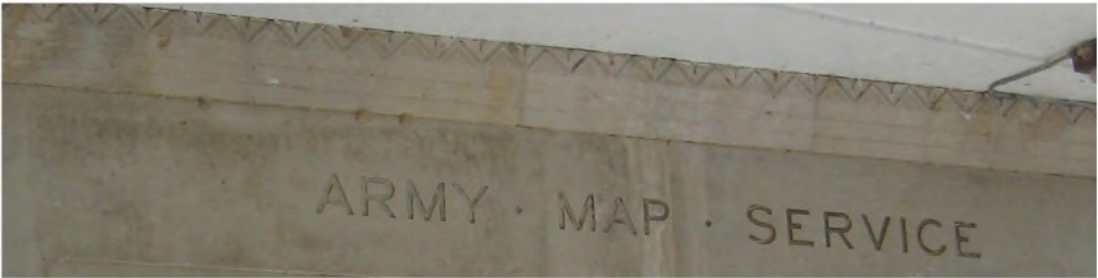
Potential Plants for Low Shrubs + Occasional Trees (no restrictions)
Gleditsia triacanthos 'Skyline' (transplanted)*
Quercus alba

* same species as North Campus



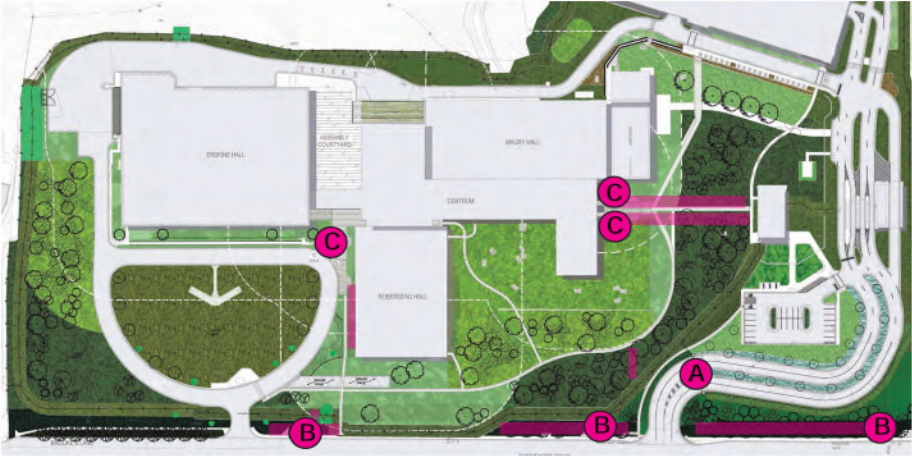


A. PHOTOGRAPHS OF ARCHIVAL MATERIAL TO BE INCORPORATED IN HERITAGE INTERPRETATION SITES



Archival Materials Available for Use in Heritage Interpretive Areas								
Item	LF	Length	Width	Depth	Material	Source	Quality	Potential Use
		5'	*	6"	sandstone	Erskine		Benches, wall caps, landscape features, sidewalks
		7'	*	6"		Erskine		

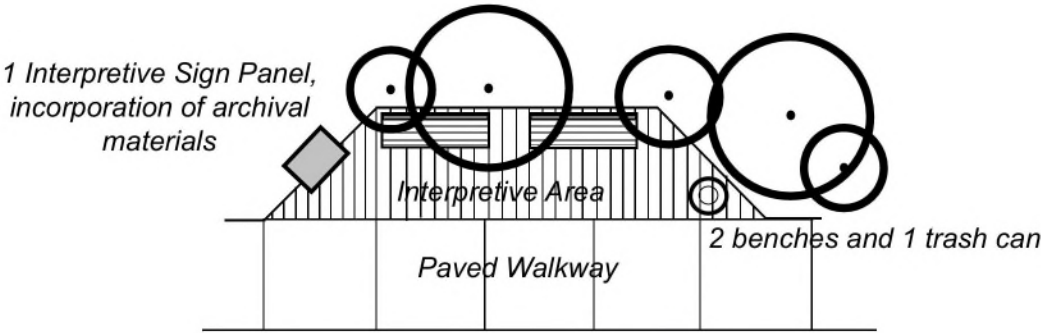
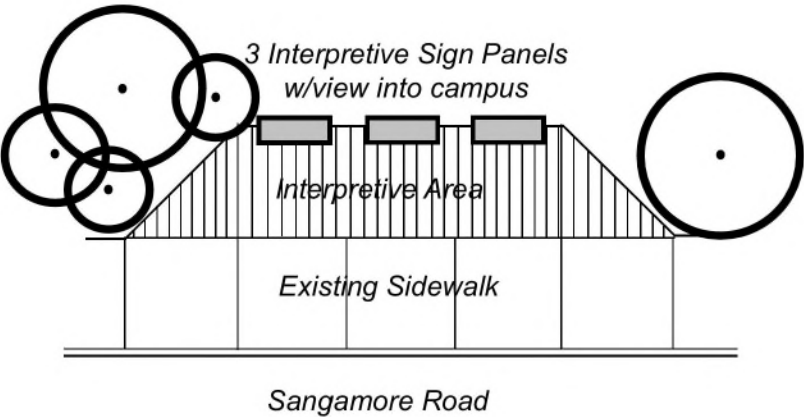
*width indicated as 15"; 27"; 33"



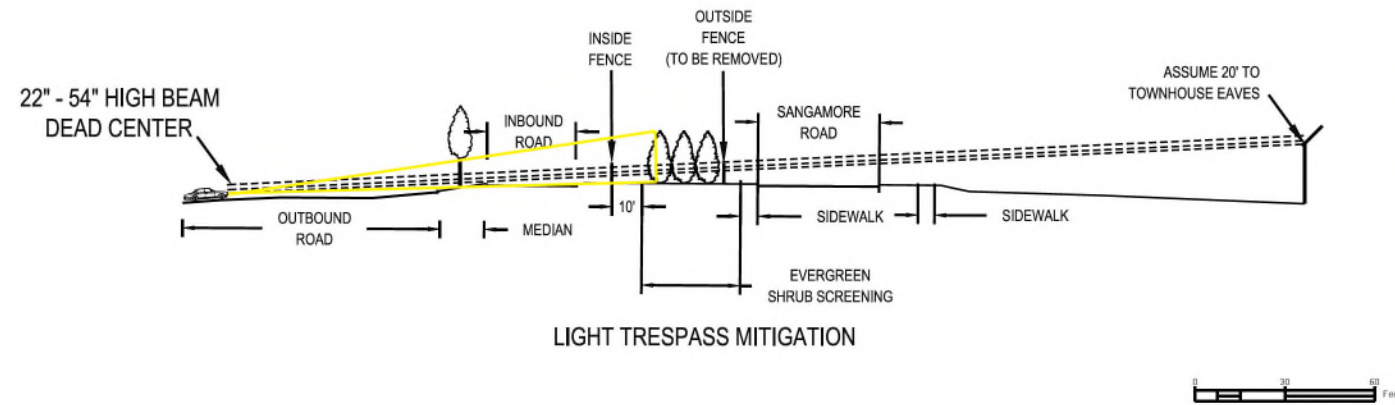
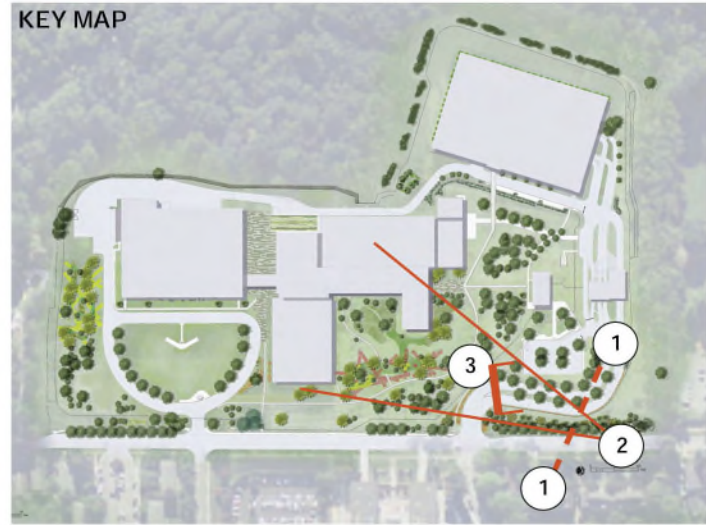
Opportunities for interpretive heritage panels and archival displays
PROPOSED LOCATIONS FOR INTERPRETIVE PIECES



1. PERSPECTIVE ACROSS ELLIPSE, LOOKING TOWARDS ERSKINE AND ROBERDEAU



L6 Perspective 1 'View from Sangamore Road' and Interpretive Opportunities



1. ENTRY SECTION, EVERGREEN SCREENING OF HEADLIGHTS DIRECTED TOWARDS SANGAMORE ROAD



COLUMNS USING RECLAIMED STONE FROM ERSKINE HALL

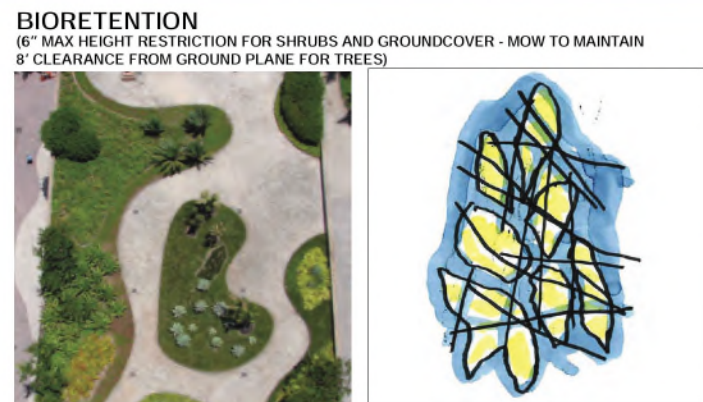
PHOTOGRAPHS AND ILLUSTRATIONS OF ARCHIVAL MATERIAL SALVAGED FROM FACADES FOR USE IN CONSTRUCTION OF ENTRY GATE COLUMNS



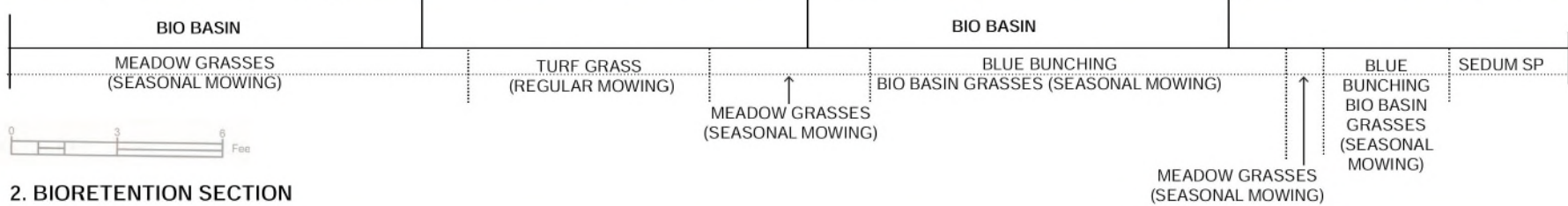
2. PERSPECTIVE AT ENTRY, LOOKING THROUGH EVERGREEN SCREENING TOWARDS ROBERDEAU



3. ELEVATION OF ENTRY GATE COLUMNS AND FENCING



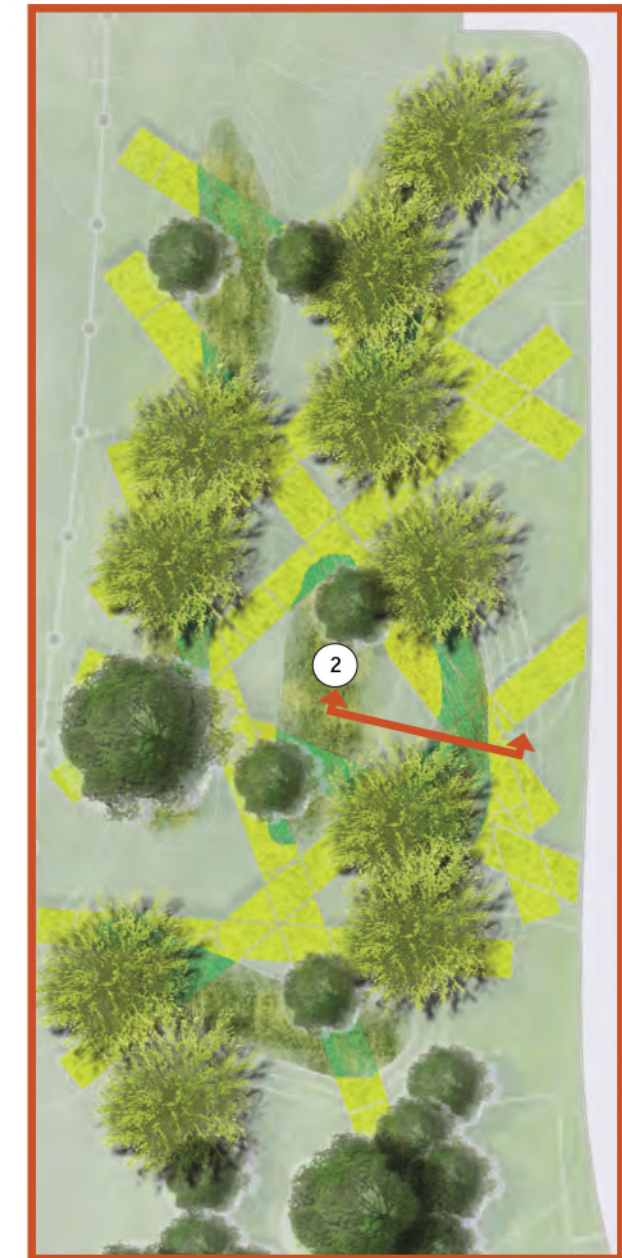
1. BIORETENTION CONCEPT AND PLANT LIST



2. BIORETENTION SECTION



BOULDERS IN MEADOW GRASSES (MOW TO 6")



3. BIORETENTION DIAGRAMMATIC PLAN



SEDUM PLANTINGS